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REPRODUCED elsewhere are some statistics prepared by the Interstate Commerce Commission. In the analysis of operating expenses for repairs and renewals it is rather interesting to note that in the case of the Atchison, Topeka & Santa Fe—the road that has given efficiency methods the most thorough tryout—the cost for repairs and renewals per locomotive mile run was on the average 10.19 cents during the five years from 1906-1910, as compared with 9.73 cents on the average in the five years, 1901-1905, and was 10.75 cents in 1910. The expenses per mile run for repairs and renewals for both passenger train cars and freight train cars were higher on the average in the last five years than in the previous five years, and were higher in the case of passenger cars, but not in the case of freight cars,

in 1910 than the average for the last five years. This is interesting; but it proves nothing. A comparison of maintenance charges per locomotive or per freight car rather than per locomotive mile or per car mile is in general a better basis on which to compare maintenance charges. The use of car or locomotive mileage gives a misleading impression of great accuracy, while as a matter of fact the expenses for repairs and renewals per unit of equipment comes nearer to being a true criterion of unit maintenance charges.

ILLINOIS is one of the states in which no anti-pass law has been enacted, and a movement has been started for the passage of one at the present session of the legislature. The agitation of the subject has called attention to the fact that some of the Illinois lines are still issuing passes to members of the legislature and that a large majority of the lawmakers have accepted and are using them. Public sentiment regarding the giving of passes, especially to members of legislatures, is perfectly well known. It has found expression not only in numerous state laws but in the Interstate Commerce act. This public sentiment is justified. It has been said in defense of the practice in Illinois that the giving of free transportation to the legislators is merely a courtesy and is not intended to influence their action; that, in fact, it does not influence their action; and that these representatives of the people are so poorly paid by the state that if deprived of free transportation their traveling expenses would be so greatly increased that their labors for the public would involve actual pecuniary loss to them. If passes do influence legislative action, they influence it in an improper way. If they do not, the giving of them amounts to the extension of a courtesy at the expense of the stockholders of the railways which does not benefit the stockholders. If the lawmakers are so ill paid that they must have free transportation to make both ends meet it is the business of the state, not of the railways, to furnish them additional compensation or additional expense money. In Illinois and other states where anti-pass laws have not been enacted the railways ought to make their passage unnecessary by ceasing to give free intra-state transportation to any persons to whom the giving of free interstate transportation is not permitted by the federal law. Where the railways continue to give transportation to persons who have no claim to it, their action affords justification for the passage of anti-pass laws; and in affording this justification the roads arouse a hostile public sentiment which, after the legislative passes have been withdrawn, is apt to cause the legislators to enact all sorts of laws inimical to railways.

NO part of the various activities of a railway corporation are so little understood by the general public as the railway company's relations to its stockholders as partners in the enterprise, and with its bondholders as creditors of the business. Any one of a dozen causes is sufficient to explain this. The subject is highly technical, and discussions of it are likely to quickly take the form of a theoretic or philosophical discussion of something that is quite intangible. Moreover, bankers are notoriously reticent. The proverbial timidity of capital has been so impressed on their minds from their earliest clerkship that reticence has become second nature to them. The commission which has been investigating the subject of the issuance of railway securities and the advisability of more direct government regulation or control of this activity of corporations is composed of men with the broadest possible outlook, and the men who have been called before the commission to discuss the subject of regulation of the issue of securities have been taken from almost every conceivable field that could offer any intelligent suggestion. From the newspaper reports of the hearings it is possible only to get a fair idea of how broad the discussion has been. It is quite possible to see in certain testimony that the witness seldom lost sight of the fact that he had his own axe to grind. On the other

hand, a good part of the discussion has been an expression, frank to an unusual degree, of personal conviction. The general impression of what might well be the conclusion of the commission is summed up by Frank Trumbull in his discussion before the commission, as follows:

"If you should conclude that you cannot put this subject in a plaster cast because one arm of the body is in Boston and another limb is on the Staked Plains of Texas, I am sure we will get from the report of this commission conclusions which will illuminate the whole subject; and if the mediation of labor differences is better than compulsory arbitration, it may be that your findings will be more serviceable, if not too rigid, if they do not appear to be precise, for that might bring the federal government in conflict with the states."

There has been a very great amount of information placed at the disposal of the public probably for the first time. A part of this information may have always been common knowledge of expert bankers and of the highest financial officers of the larger railway systems, but for the first time the general student gets an opportunity to learn something of the really intimate theories and opinions that have been developed by those who have been largely instrumental in shaping the course of railway development in this country.

THE sale of new stock at par to stockholders when stock is selling above par in the market is one of the questions that has been discussed by various men who have been called before the Hadley commission on the issuance of railway securities, and it is one that permits of discussion separate from the question of the regulation of railway securities. Mr. Trumbull gives a very interesting illustration of what would be the effect of the issue of new stock by a railway company. He says: "A good many people seem to think that when the stock of a railway company is selling at say \$150 per share, and a share of new stock is offered at \$100, somebody is making a great profit. My thought is that the answer is a very simple sum in arithmetic. You cannot mix one \$150 share with one \$100 share and come out with two \$150 shares." He takes the Pennsylvania's stock issue as an illustration. There was outstanding November 1, 1909, about \$320,000,000 stock, with a marked value (at \$150 per share) of \$480,000,000. There was new stock issued at par amounting to \$80,000,000. Adding the assets of the company to the market value of the old stock we get a total of \$560,000,000 as the total market value of the new and old stock now outstanding; in other words, all of the partners in the business have contributed \$80,000,000 pro. rata to their business, and their business is worth \$80,000,000 more. It is rather hard to see who got the great bargain, or how a profit was made at the expense of the public. Pennsylvania stock is paying 6 per cent. on par.

#### LIGNITE FUEL FOR LOCOMOTIVES.

RENEWED interest in the use of lignite as a fuel for locomotives has been shown by the changes in practice of the lines in the Northwest. The Chicago, Milwaukee & Puget Sound, the Great Northern and the Northern Pacific are arranging to ship oil 1,300 miles from Bakersfield, Cal., to Tacoma, Wash., and Seattle; the last two mentioned roads have storage tanks for the oil in process of construction at Tacoma, and the oil is to be used on locomotives crossing the Cascades and the Rocky mountains. The Chicago, Milwaukee & Puget Sound is burning oil on locomotives running between Tacoma and Deer Lodge, Mont., but has 75 locomotives equipped with the Brooks spark arrester, so that the semi-lignite coal from its mines at Roundup, Mont., may be used. The Oregon Railroad & Navigation Company used oil to some extent, but lately has demonstrated by tests on a Mikado type locomotive especially designed for the use of lignite, that Washington lignite may be burned safely and economically. As a consequence it will order more freight locomotives of the same type especially designed for burning lignite. The North Western and the Mallet locomotives of the Burlington are using lignite in Wyoming and Colorado. These Mallets, illustrated in the *Railway Age Gazette* of May 13, 1910, have large fireboxes 78 in. x 120 in., a grate

area of 65.2 sq. ft., and 5,090 sq. ft. of heating surface. The Oregon Railroad & Navigation Company's Mikado locomotive, which is illustrated in this issue, has a still larger firebox, 7 ft. x 10 ft., providing 70 sq. ft. of grate area and has 495 tubes 20 ft. 6 in. long, giving a tube heating surface of 5,292 sq. ft. Both the Burlington Mallets and the O. R. & N. Mikado have fire-brick arches and very large smokeboxes—100 in. long—so that it is possible to use a large netting area. The numerous experiments with lignite as a locomotive fuel have usually been made with some modification in the draft appliances of the engines keeping the fireboxes and smokeboxes of the ordinary proportions; as a rule, they have not been successful.

Nearly 40 years ago John E. Wootten demonstrated that in order to burn fine, friable fuel on locomotives it was necessary to have a large grate of about 80 sq. ft. area and a mild draft. The theory of the large grate is that the pounds of coal burned per square foot of grate may be small, but the total fuel burned per hour will be large with a corresponding abundant steam production. With a low rate of combustion per square foot of grate and a thin fire the vacuum required is low and the mild blast does not draw large quantities of the light fuel through the tubes. These are the conditions required for burning lignite, and the successful operation of the locomotives referred to above is principally due to their wide fireboxes and large grate areas. However, the brick arch and the long smokebox are also important features. The brick arch is especially useful for burning fine, light fuel like lignite. It increases the length of the flamework, and holds the finely divided fuel that is lifted from the grate in suspension for a longer time, allowing much of it to be burned by the flame, assisted by the radiation from the red hot brick. The brick arch also assists in distributing the draft over the entire grate, thus contributing to more uniform combustion and increasing the efficiency of the furnace. It is evident, therefore, that with the brick arch a large proportion of the sparks which might ordinarily be drawn through the tubes are burned in the firebox and do not reach the tubes. Those which do pass through must be caught, and with a light fuel like lignite a large area of fine netting is required; this is most easily and efficiently arranged in a long smokebox. The mesh of this netting should be about 7 wires per inch, and the diameter of the wire about .045 in.

The friction of the long tubes has some influence in retarding the discharge of sparks. The boiler of the Mikado locomotive has tubes only 2 in. in outside diameter, but 20 ft. 6 in. long. The Burlington Mallet has tubes 16 ft. 6 in. long; an intermediate boiler section 69 in. long without tubes, where a large portion of the sparks must be deposited; and a feed water heater with 406 2½-in. tubes 9 ft. long, which the remaining sparks must traverse before reaching the smokebox. It is obvious that sparks, especially those of a woody nature like lignite, will not have much life in them after traversing the 25½ ft. of tubes with an obstructing compartment between the two sets.

The problem of burning lignite appears to have been solved satisfactorily by the use of locomotives with large fireboxes and long smokeboxes, but it is desirable also to burn lignite on the older locomotives with smaller fireboxes, and it is possible that a brick arch and a long smokebox with some special spark arrester used with such engines may be successful. The Van Horn-Endsley spark arrester, a device for such purpose was recently tested at the locomotive testing laboratory at Purdue University, the results being published in the *Railway Age Gazette* of December 23, 1910. It was applied to a small locomotive of the Chicago & North Western, in which the smokebox was lengthened to 96 in., the rear 5 ft. being fitted with a spiral diaphragm commencing immediately in front of the tube sheet. This directs the gas current around the outer portion of the smokebox, and by the centrifugal action the sparks and cinders are thrown to the smokebox wall, and follow the shell until they drop in the hopper at the bottom. This is such a complete spark arrester that no netting is required, and when



tested at night with Wyoming lignite, running under a heavy load, very few sparks were observed to pass out of the stack.

It is fortunate for the railways operating in the far north-western territory that large fields of cheap fuel in the form of lignite are found in localities far removed from a good coal supply, and that it is possible to so proportion the boilers of locomotives that they will burn it safely and economically. It is also quite probable that the smaller locomotives may be so modified in their smokebox and draft appliances in such a way that they will use this cheap fuel successfully.

#### "UNITED WE STAND; DIVIDED WE FALL."

THE Special Committee on Relations of Railway Operation to Legislation has just issued a bulletin (No. 13) in which it discusses the "broad question of the relation of railway operation to legislation and the extent to which the railways can aid themselves in meeting the fair demands of the employees and the public." The tenor of the committee's remarks is that the railways must work together better in future both to remedy and prevent operating conditions which may afford ground, or even pretext, for further unnecessary extensions of government regulation of operating matters, and to make sure, when additional regulation may be desirable or inevitable, that it shall be given a form that will secure the maximum good and cause the minimum harm to both the railways and the public.

This is an exceedingly opportune time for discussion and consideration of this subject. Who would have thought ten years ago, or even six years ago, that before the close of the year 1910 the traffic officers of the railways of the United States would have been deprived entirely of the power to initiate interstate rates? Prior to the passage of the Hepburn act the demand of advocates of government regulation was that the Interstate Commerce Commission be given merely the power, after complaint and investigation, to reduce any specific rate or schedule of rates which it found unreasonable. Almost everyone agreed that the right and power to initiate rates should be left with the officers of the railways. Today, as a result of the legislation of 1906 and 1910, the commission can not only reduce any rate it may find unreasonable, but without any previous complaint and on its own motion, it may prevent for a period of ten months any proposed advance, and if it finds it unreasonable may entirely forbid it. After that the only way the railway can secure the advance is by protracted litigation. The commission is exercising its authority in a wholesale way. The vice-presidents in charge of traffic, in consequence, now have no more power to make rates than a division freight agent had ten years ago. They have less power to advance them. In effect, all that they can do when they want to raise them is to suggest to the commission the question of the legality and expediency of the raise. The consequence is that progress in the entire railway business waits while the commission takes testimony and deliberates.

The dominion of the government over the prices that the railway may receive for its services having now been made practically complete, its attention is being turned to operating questions. At the last session of Congress an act giving the commission authority to prescribe the safety appliances to be used on equipment was passed. Another act to empower it to investigate accidents was passed. Perhaps there is not a great deal in these measures to criticize, just as there was not a great deal in some of the earlier laws for the regulation of rates reasonably to criticize. The advocates of government regulation of the operating side of the railway business now protest that they do not want the government to assume entire control of operation, just as before they said they did not want the government to take entire control of the making of rates. When the railway manager looks back over the history of the regulation of rates, he is not apt to put much confidence in

such professions. When he glances over the measures for further regulation of operation, which are pending in the present Congress—including, for example, bills to amend the hours of service law; to fix minimum clearances; to require the substitution of steel and steel underframe passenger equipment for that now in service; to specify the number of men that shall compose a train crew; to require the universal installation of block signals—his lack of confidence in such professions will be confirmed.

Everyone can now see where the railway managers made mistakes in handling the question of regulation of rates; anyone can be wise after the fact. The same craving for greater and greater authority which impelled the Interstate Commerce Commission to seek more and more legislation for the regulation of rates will impel it to seek more and more legislation for the regulation of operation. Suppose that certain conditions in the operating department analogous to, but perhaps far from as bad as, those that obtained in the traffic department continue, and that the railways are equally slow to remedy them. Does it not seem probable that, in these circumstances, there will grow up an overwhelming public sentiment in favor of more and more drastic regulation of operation, as there did for more and more drastic regulation of rates, and if the railway managers do not show more statesmanship in dealing with this sentiment than they did in dealing with the sentiment for regulation of rates, the operating men, in the course of a few years, will find themselves as completely bound hand and foot as the traffic men are now? Ought not the railway managers, therefore, very seriously to consider what course they are going to take in dealing with the question of regulation of operation, and after they have decided what ought to be done, to begin promptly to do it?

The existing laws for the regulation of rates grew out of two conditions. One was a bad condition in the railway business. The railway managers themselves ought to have stopped rebating. But they did not do it. They ought themselves to have abolished other forms of unfair discrimination. They did not do it. The second condition referred to was lack of public intelligence regarding rates. The railway managers, as soon as the propaganda for government rate-making got well under way, ought to have begun and kept up a counter-campaign as wide as the nation to educate their employees and the public regarding rate matters. They did not do it. In the work of correcting the abuses in the traffic department on the one hand, and of educating public sentiment regarding traffic matters on the other, they ought to have worked harmoniously together, each road subordinating its petty, selfish interests for the benefit of all. Everyone knows that they made numerous "gentlemen's agreements," and then went forth and speedily and cheerfully violated them. Most of the managers wanted to keep these agreements, but there were so many who would not be bound by them that rate-cutting and its attendant discriminations could not be stopped except by law. No doubt we should have had some form of regulation of rates, even if the railway managers had worked together consistently and harmoniously to eliminate abuses from the traffic department, but it would have been neither so drastic in form nor so harmful in its results.

Taught by the experience of the past, it would seem that the railway managers ought today to be working harmoniously and energetically together, first, to make railway operating conditions more defensible, and, second, to educate public sentiment regarding the things that ought to be done and the things that ought not to be done, and the reasons why. Are they doing these things as well as they could? Nobody would answer in the affirmative. When, in the past, the American Railway Association has been criticized for having done nothing to stop rebating, it has been answered that it was purely an operating organization and had no authority over traffic. The natural answer to this was that since it was purely an operating organization either its scope should be broadened so that it could

deal with traffic matters, or some other organization of executive officers should be formed which could and would do so. When it is now suggested that at least as to the various proposals for legislation to regulate operation it is peculiarly the American Railway Association's function to do something because it is peculiarly an operating organization, various arguments having more or less plausibility are offered to show that it cannot do so. The consequence is that many such matters have to be handled by committees, representing the railways, it is true, but which do not represent the American Railway Association, and the action of which it can disavow. Now, it may be, as some contend, that the American Railway Association should go on as it has in the past, studying and investigating different operating questions in committee, adopting certain rules of recommended practice, and doing nothing in particular to get the different roads to conform to them; but it does seem to us that the argument in favor of its being made a strong, aggressive organization, which will at once exert a powerful influence to get the different roads to use the best appliances and the best operating methods, and at the same time to prevent legislation and orders of commissions imposing unreasonable burdens and restrictions on them, is overwhelming. Take, for example, what the association did to secure the adoption of uniform demurrage rules. First, its car efficiency committee drafted a code of rules which was reasonably satisfactory to the railways throughout the United States. Then, working harmoniously with representatives of the state commissions and of the Interstate Commerce Commission, as well as with the railways in different sections of the country, the car efficiency committee got the rules adopted as standard practice, not only by the American Railway Association but by the National Association of Railway Commissioners and the Interstate Commerce Commission. The result is that today the uniform code of demurrage rules is in effect practically throughout the entire country.

Take, again, what was done by the general committee on safety appliances in handling the questions arising from the passage last year of the new safety appliance law. This committee did not represent the American Railway Association, but merely the railways which consented to become its constituents; but the work it did seems to be an excellent model for other committees which may or ought to be given the duty of handling questions of public regulation. It conferred with representatives of the railway brotherhoods, with the safety appliance inspectors of the Interstate Commerce Commission and with the commission itself, and as a result of its efforts standards were agreed on for new cars which are reasonably satisfactory to all directly concerned. The committee has yet to handle on behalf of the railways the question of standards of appliances for old freight cars, and there is little doubt that if it does this as well as it has done its other work the results will be satisfactory and valuable.

Surely what was done as to these matters was sane and wise, and if it was why does it not afford a good example of what the association might do and ought to do in regard to a great many other matters? No doubt the uniform code of demurrage rules was better adapted to the needs of the railways and the shippers in some parts of the country than it was in other parts. Its general adoption could only be obtained by subordinating the comparatively unimportant interests of the few to the relatively very important interests of all. There are very few railway managers who would not say that the means used were commendable and that the results are good.

There are numerous other matters, particularly operating details, regarding which the railways by similarly sensible and harmonious action might get similarly satisfactory results. For example: The public has a right to demand and does demand that railway operation in this country be made more safe. This demand, which is expressed in the pending measures already referred to, is going rapidly and steadily to grow stronger. If the railways do not progress faster in the future

in making it safe and at the same time take better measures to show the public why they are unable to make it safer and faster, there will in all probability be a big crop of laws, federal and state, requiring larger train crews, three men on an engine, further limitation of the hours of labor, installation of block signals, installation of automatic stops, etc. All railway operating executives know that on many railways a good many accidents are due to the fact that an excessive density of traffic is being handled without the protection of block signals and that on such railways block signals of some kind ought to be installed. They were also practically agreed as to the safety appliances that ought to be used on railway equipment, and the Master Car Builders' Association adopted standards which were based on the experience and the best judgment of its members. If the American Railway Association had taken action resulting in the use of these uniform standards on all railways, it seems highly probable that the safety appliance legislation of last year would not have been passed. But because some of the railways did not individually see fit to do their duty in this matter and the railways as a whole did not put on enough pressure to get them to do it, Congress decided, and with some justice, that there ought to be legislation on the subject. It is well known that not only are many lines of pretty dense traffic not protected by block signals, but that there is a great lack of uniformity in the rules under which those having block signals are operated. There are cases where three different railways operating under trackage rights over the same tracks are all running their trains under different rules as to signaling. The dangers connected with such lack of uniformity are well known.

Which are the railways going to do—correct the situation themselves, or wait until Congress compels them to do it? If Congress passes legislation on this subject it is almost certain, in view of past experience, to contain unreasonable provisions which will impose unnecessary expense on the railways and do the public no good.

Railway managers know that the great majority of accidents are due to carelessness or recklessness on the part of employees, resulting in disregard or violation of the rules of the companies. They can point to the fact that the American Railway Association has developed and adopted a code of train rules which would prevent most accidents if only the rules were properly enforced and obeyed. But can they satisfy the public—or themselves—that they are all exhausting their resources in efforts to stop these infractions of the rules? Can they satisfy themselves that they are doing all they can to secure the co-operation of employees and the public in stopping them?

The different railways of the country operate under widely different conditions. Their financial resources differ greatly. These disparities make the question of what matters properly may be and best can be handled by associated, and what by individual, action a hard one to decide. Naturally, too, the officers of many railways, regardless of these differences of physical and financial conditions, wish to manage the affairs of their own roads in their own way. And it would be easy to carry standardization of apparatus and of practice to an extreme, for progress always begins with some man or group of men insisting that this or that thing should be done differently from what it has been done in the past by the great majority, and proving their faith by works. But the question whether particular things shall be done by individual or associated action should always be decided in the light of a full recognition of the fact that government regulation is here; that it has come to stay; that it is more apt to increase than to diminish; and that for that reason a policy may be wrong which, but for it, would be right.

On the occasion of the signing of the Declaration of Independence Benjamin Franklin remarked to his fellow signers, "We must all hang together, or assuredly we shall all hang separately." Largely because the railways of the United States have not hung together at times when they should have,



the public has for some years past been hanging them separately.

There is an old story about an aged father who, when about to die, called his numerous able-bodied sons about him and challenged either of them to break a bundle of sticks which he handed them. Each tried it and failed. The old gentleman then untied the bundle and, sick and feeble though he was, easily broke each of the sticks over his knee. The moral of this, as it applies to the railway business, as it is now conducted in this country, surely requires no pointing.

#### AUTOMATIC STOPS.

THE Block Signal Board, whose annual report, slightly abridged, appears in this and last week's issues, says that during the past year there has been some progress in automatic stops. A committee of the Railway Signal Association said the same thing at Richmond last October. Some progress has been made in Germany, as was shown in a paper which was noticed in our issue of January 13, page 89.

The Germans, like the English, are satisfied with a cab signal, and do not trouble themselves about automatic stops; but that is not an important difference at the present stage of the development of the art, as the principal thing to be done is to find the best means of producing, by roadside power, a small movement on a moving vehicle. This much settled, the question, of what use shall be made of that movement is not likely to present serious mechanical difficulties.

The progress here noticed is mostly invisible to the physical eye. Railway men and signal makers have done some thinking, but they still leave the main questions untouched and do not build anything. The Washington Water Power Company, however, has made actual progress, putting automatic stops in use on its interurban electric line; and the Erie seems to have adopted the Harrington stop for a short section of one of its lines; that is to say, the Harrington installation seems now to be treated as permanent instead of experimental.

What does this progress, real or imaginary, amount to? The railways, as represented in the Railway Signal Association, continue to demand perfection. They know, of course, that the conditions under which they labor are such that they will never get it. The demand for perfection is not wholly unreasonable, for a pretty close approach to perfect safety is possible without either automatic stops or cab signals, and it would seem wasteful to adopt any radical change which did not produce a marked improvement. The activity of the Block Signal Board is due to the fact that the inventors keep on bringing out new schemes; but the immediate desideratum is the development of the details of the schemes already known. This maladjustment is inevitable, for the men with schemes have unlimited time on their hands, but no railway, while the railways, which have the facilities for development, seem, for the most part, contented to wait. This apparent hesitation is not strange, for the adoption of automatic stops on a large road would bring in new responsibilities. The stop would save lives and property only rarely, yet would have to be kept at the highest efficiency constantly. The Interboro Rapid Transit Company runs trains past automatic stop apparatus thousands of times daily, but the total number of times that the safety of trains has depended on it during the six years that the lines have been in operation is exceedingly small. On the ordinary steam railway, doing a miscellaneous business, the problem what danger spots should have automatic stops and what should not could never be settled except arbitrarily, and that would be a perpetual open question.

As has been the case with many other questions in railway management, this one seems likely to depend for its settlement largely on the element of time. When theories are obscure, elusive or confusing, everybody waits to learn from experience—the experience of some one else. But in this question, unlike many others, there is not much experience to draw from. Even the simpler improvement, the block system, has made progress

rather haltingly, and often apparently because of expected economy rather than as a safety measure, pure and simple. Automatic stops might be used on 500 miles of road for five years without proving the superiority of the system over a simple block system *reinforced by the same amount of money and thought* that is spent on the automatic stops. In this paucity of experience—lessons progress is likely to be made by "fits and starts." The Washington Water Power Company had an easy problem, compared with that of the large roads, and so it was practicable there to take action. The manager of the Pennsylvania Lines, in encouraging Gray-Thurber, is putting himself in position to be ready, in case automatic stops shall suddenly be called for by the public imperatively, while yet he is spending little money, and is not committing himself. And some sudden demand, real or imaginary, intelligent or unintelligent, is the thing most to be expected. Our worst two recent collisions (Nevada, Ohio, December 24, and Batavia, N. Y., January 13) occurred on lines where the public expects the very best service and conditions. At Batavia the engineman at fault is said to have had a perfect record for many years. If the best railways have collisions of trains which are controlled by the best men, the public, when convinced of this, will demand a change, with or without reason. That is to say, the reasons for continuing to do without automatic stops may have any amount of logic supporting them, but exasperation at the absence of any rational explanation of the disastrous results of present conditions will outweigh logic.

The public, however, is not without some logic on its side. The Block Signal Board says that the block system is not managed with maximum efficiency. The practice of the railways comes pretty near confirming this statement, by its universal dependence on the flagman. The sounding of the locomotive whistle to send out or call in the rear flagman is heard by passengers everywhere, on the best roads, day and night. This whistling would be an annoyance under any circumstances, but it is doubly so when it is considered that it is a constant advertisement of the fact that the block system is not depended on completely.

As long as the block system, as usually managed, is thus admittedly in need of improvement, it is not strange that legislators and people generally look with favor on the propositions of the inventors. They offer to reinforce the block system by mechanical or electrical devices which are at least theoretically effective, whereas the flagging system is not only a bit of unscientific patch work, but is so glaringly defective that its defects are seen and understood by every person who travels.

On the whole, therefore, it is quite possible that those observers who think that some progress has been made in 1910 have correct vision.

#### NEW BOOKS.

*Mechanical World Pocket Diary and Year-Book for 1911.* A Collection of Engineering Notes, Rules, Tables and Data. Cloth, 3 7/8 in. x 6 in., 300 pages of text and blank pages for diary and memoranda. Emmott & Company, 20 Bedford street, London.

This pocket book has been issued annually for 24 years, and with each succeeding year it has been steadily improved in quality and amount of data. This year 32 pages have been added, and by revision and condensation space has been afforded for the introduction of a large amount of new matter. Included in it are lengthy sections relating to cutting tools for standard machine tools and special sections dealing with milling cutters and twist drills. Another new section deals with high speed steel and useful data on annealing, hardening and tempering it. The gas engine claims more attention, and the portion relating to boilers and steam fittings has been brought up-to-date. The number of illustrations has also been increased about 50 per cent., and although the book deals rather with British practice than with American, it will be found convenient for ready reference in many particulars.

## Letters to the Editor.

### DEAN RAYMOND ON RAILWAY RATES AND PROFITS.

IOWA CITY, IOWA, January 10, 1911.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The claims made by the Illinois Manufacturers' Association in its brief submitted to the Interstate Commerce Commission as they appear in the public press provoke me to ask some questions and to make some suggestions.

Has it ever been clearly determined that an individual or a corporation doing business under a public franchise, and, if you please, performing one of the functions of the state, is entitled to earn no profits on the business that it does?

If this theory should ever become the accepted theory on which the regulations of rates is to be based, will there be any further performance of the functions of the state by individual persons or corporations?

What inducement would there be for any individual or collection of individuals to undertake the risk of a commercial enterprise, or, even if no risk is involved, to undertake the effort of a commercial enterprise, if thereby nothing is to be gained but savings bank interest on capital actually invested?

Physical valuation has generally been assumed to mean cost of reproduction of plant at the time of the valuation, less the estimated depreciation at that time; and various methods have been suggested for determining the cost of reproduction of the several items of the plant. I think that no method adopted has ignored the value of the real property at the time of the valuation, but that all have included the appreciation or depreciation of this real property that has occurred between the time of purchase by the corporation concerned and the time of valuation. Is this method which includes appreciation of real property an entirely wrong one, and is it a just theory that an individual or a corporation performing the functions of the state and purchasing property for such performance is not entitled to the same unearned increment that another individual or corporation that is not engaged in performing a function of the state is entitled to?

Just what is that part of the assets of a carrier given to it by the public? Two items occur to me: (1) The use of the public streets for a right of way; and (2) franchise. Whether or not the carrier may be entitled to capitalize the ground value of the public street as a right of way may be open to question. And I agree that it would be improper to capitalize the value of the franchise since the franchise has value altogether too uncertain to warrant an attempt to capitalize it, and further because to get at a basis for rate regulation such valuation is wholly unnecessary.

That a carrier is not entitled to capitalize the value of its road as a going concern for a basis for rate making must be patent to anyone because this value depends upon rates now in force, which rates may be in question.

How does it occur that the source of the money invested in the property has anything to do with the value of the property? The Illinois Manufacturers' Association seems to hold that a carrier is not entitled to earn as much on money put back into its property from earnings as it is entitled to earn on other capital. Without knowing the reason for this distinction, I presume that it lies in the fact that money so earned may have been earned by charging unreasonable rates, but would not this fact have to be proved? Possibly another argument is that this money is the public's money which, it may be assumed, is given to the company through payments for service for the purpose of making the property more serviceable. But this argument does not appeal to me as one having great force, because this money has been earned by conduct of the business of manufacturing transportation, which is a separate and distinct propo-

sition from ownership of a highway. Some years ago in the columns of the *Railroad Gazette* I called attention to the fact that reasonableness of rates as a whole must not be judged by capital invested but by the magnitude of the business done and that the reasonableness of individual rates must be determined by what the traffic will bear. In a recent discussion of a paper on valuation presented to the American Society of Civil Engineers I took the ground that a valuation for rate making could not be a valuation of the physical property nor a valuation of the property as a going concern, and that, indeed, no valuation properly measured reasonableness of rates; but that the reasonableness of rates as a whole, *if the government wishes to regulate this item*, should be determined as follows:

*Rates as a whole should be such as to return a reasonable investment interest rate on the physical valuation plus a reasonable business profit rate on the business done.* This second item may be determined by adding a proper percentage of operating expenses, which must include not only the ordinary cost of services but the necessary sinking funds or their equivalent in maintenance expense to maintain the property in a condition for efficient service, including betterments which may be paid for out of earnings.

It seems to me that only a part of a railway enterprise is the function of the state,—namely, the provision of a highway, which by the peculiarities of the case cannot be operated as a toll road (even though it is in part so operated), but must be operated by a single concern. The property might be rented to an operating corporation by the owning corporation, as is in fact sometimes done, at some maximum rate prescribed by law, just as toll rates are prescribed, except that, if convenient, the rate would be a guaranteed interest rate rather than specific charges for a variety of traffic units. If this were done, would there be anyone who should say that the operating company manufacturing transportation for sale is not as much entitled to a business man's profit as in any member of the Illinois Manufacturers' Association who makes some other commodity than transportation?

It might be claimed, indeed, that such an operating company should not be limited at all in its earnings, being permitted to charge whatever transportation rates it might see fit or be able to exact; but there is certainly a general feeling growing, if it has not already matured, that even such a company doing an interstate business possesses a partial monopoly and is serving the people in such a way as to make it amenable to public regulation not only in the matter of safety, adequacy, and efficiency of service, but also in the matter of its charges.

I am quite firmly convinced that if rates are based on what the traffic will bear, when that expression is properly defined and is understood to mean what the economists call the monopoly price, not more than a reasonable business man's profit will result, and that indeed rates so fixed are what may be called economic rates. But, if the people as a whole after due consideration determine that this is not so and that a business man's profit should be limited to, say, 15 per cent. when the business conducted is of such a semi-public nature as that of common carriers, then if, after rates have been fixed at what the traffic will bear, there should result a greater return than the allowed business man's profit a horizontal reduction in all rates would seem to be a proper course. But on the other hand, if in the attempt to fix rates at what the traffic will bear, rates as a whole have given less than the allowed business man's profit, then it would seem proper that a horizontal increase in rates should be made.

The essential points that I wish to make are:

1. That taken as a whole, the property and the business together, no court and no individual can ever determine what reasonable rates are by attempting to say that they shall be any particular percentage of any particular valuation of the property.
2. That two things, the investment in physical property and the conduct of the business, must be kept distinct and separate.
3. That a reasonable minimum return must include an invest-



ment interest on the physical value of the property, including unearned increments and a fair business profit on the business done.

4. That if individual rates are finally correctly fixed at the monopoly price, no more than a proper business man's profit will result even if that profit be very large.

5. That, if, however, in return for the privilege of doing this semi-public business, government assumes to say that the profit rate shall be limited, then it must be limited as indicated in point No. 3.

Since formulating the foregoing, I have read the first installment of Mr. Acworth's studies in your issue of January 6, and am thereby encouraged to believe that the statements of this letter are not far from correct.

WILLIAM G. RAYMOND.

### STUDIES IN RAILWAY ECONOMICS.

BY W. M. ACWORTH.

#### IV.

In the previous article I endeavored to show that reductions of rates that will pay the railway undertaking sooner or later are at least as likely to be made under private management as under state ownership. Whether reductions that will never pay directly ought to be made at all is a question so difficult that I am unable to formulate any categorical answer, even in my own mind. I think I can conceive circumstances in which they ought to be made, but I am clear they are not circumstances which will normally arise, and I am quite clear that in a democratic state at all events the reductions that are most likely to be made under state ownership are not of a class that ought to be made at all. When the state owns the railways, the state is absolutely compelled half year by half year, or quarter by quarter to pay the interest to the uttermost farthing on the railway debt, whether the railway undertaking has earned that interest or not. In other words, if reductions deplete the net revenue below the minimum point, the balance has to be found out of the general taxation of the country. Now the inhabitants of a country obtain the benefit of railway service in quite unequal degree. To the trader and the wholesale manufacturer railway rates are of first class importance. They hardly affect at all the poorer class of the population; they affect very little the farmers and manufacturers who sell their products in local markets; so that a railway deficit taxes the whole population for the benefit of one class.

But there is more than this. Reduction of rates are seldom of general application. They are granted for the benefit of a particular trade or a particular locality, and, therefore, the case is often not merely the taxation of the many for the benefit of the few, but actually the taxation of the whole country for the benefit of one locality; or the taxation of one set of traders for the benefit of others, possibly less vocal, but by no means certainly necessitous or less meritorious. On the whole, my conclusion is that, though theoretically a reduction of rates at the expense of general taxation might under certain circumstances be justifiable, the power to reduce is so much more likely to be abused than to be used rightly that it would be in the interest of the country, at least in a democratic state, that there should be what the Americans call constitutional limitations, preventing any reduction of rates, which even temporarily reduced the net revenue of the state railway undertaking, below the sum necessary to meet the full interest on the railway debt.

If the contentions urged above have any force, we are shut down to the conclusion that, so far at least as the operation of existing railways is concerned, no advantage can be gained from nationalization. I am somewhat surprised to find that Sir George Gibb in the very interesting railway paper read by him not long since before the Royal Economic Society declares that,

while there is a good deal to be said for the state taking over existing railways, there is no justification for the state building railways at the outset. For myself, I should have come to the precisely opposite conclusion. That Belgium was justified in adopting a policy of state construction when the only capital otherwise available was foreign capital objectionable on political grounds, I quite believe. That Australia had to have a railway somehow, and that state railways were better than the alleged alternative, no railway at all, I quite understand. I can appreciate that the disadvantages were considerable; that the railways would probably have been built cheaper; that they would have been laid out with a more single eye to the economic development of the country, had they been built by private capitalists at their own expense and risk, seems to be highly probable; but I cannot see that the game would have been worth the candle. But to say that when a country is equipped with all the railways that it practically needs, when the money has been found with no risk to the state, it is desirable to transfer them from private to state ownership, when the disadvantages of the transfer are certain and the gains—to put it mildly—problematical, this passes my comprehension.

It must of course be admitted that, if the aims of private management and the aims of public management are essentially divergent, if private ownership implies a policy inconsistent with the best development of all the resources of the state, private ownership must go. But does private ownership imply any such policy? Is there any real difference between the policy that we may expect to be pursued by a normally enlightened railway company and the policy that ought to be pursued by the state? I have given above reasons for thinking that state operation is not likely to be more economical, and that in the matter of rate reduction the private undertaking is at least as likely as the state to make all the reductions in rates that ought to be made, while the state is much more likely to make reductions that ought not to be made. But the state, we are assured, can tap new sources of revenue. We used to hear much from chambers of commerce and similar bodies about the avoidance of "waste of competition." Of late years the private companies of America have done a good deal independently of the state to reduce this waste. More recently the private companies of Great Britain have followed their example. If I am not mistaken, the complaints as to the waste of competition, both in the United States and in England, are already becoming less vocal as traders, and others are gradually discovering that elimination of waste means in practice the withdrawal of advantages which possibly they ought never to have had, but which from long enjoyment they have come to regard as naturally and rightly belonging to them. Recent history has shown how exceedingly difficult it is even for private companies to take back that which, whether rightly or wrongly, they have once conceded. For the state—once more let me mention that I am speaking of a democratic state only—to take back a concession would be, I believe, as a matter of practical politics, out of the question; and, if justice was found to demand an equality of conditions, the only possibility for the state would be not to level down, but to level up, and the final result would be simply disastrous.

We are told further that substantial economies are to be affected by unification of management. In a railway journal this hardly needs discussion. Practical railway men know how very unimportant compared to the total expenditure, are the heads of expenditure under which alone economies are even theoretically possible. Students of railway history know how far the anticipated results of state purchase have corresponded with the actual subsequent facts. The public men of Switzerland have by now been sadly disillusioned; and even the French deputies seem already aghast at the result of the recent purchase of the Western railway, which was carried through by a purely political vote in spite of the protests, not only of all the chambers of commerce in the districts primarily affected, but actually of

the great majority of the parliamentary representatives of those districts.\*

One advantage, however, must be conceded to the state as compared with private companies. The English railway companies know to their cost that for the last 16 years it has been almost impossible for them to raise rates. The American companies are having the same lesson taught them even more drastically at the present moment. Governments have proved again and again their ability to raise rates and let the will avouch the deed. Half the state railway systems of Europe have made important increases in rates within the last few years: Russia, Austria, Hungary, Denmark, even Switzerland quite recently, while Prussia, in spite of the fact that its railways are already called upon to pay a very large portion of the general expenses of the government, has in the last year or two put a very heavy tax on railway passenger tickets. I am far from saying that these increases are not justified. I am persuaded personally that a great many short-distance rates in England and a great many long-distance rates in America, a great many car-load rates in America and a great many small consignment rates in England, are too low. I only desire to point out here that, when laymen write glowing treatises on the advantages of nationalization, they do not usually put the greater facility with which the state can increase rates in the forefront.

So far, we have been dealing with the relative advantages of state and private ownership and, as will be seen, the decision in my judgment must be that private ownership should in the interest be maintained. But private ownership can only continue to exist, if private management not only conforms to the interest of the community as a whole, but can succeed in impressing on the community the belief that it does so conform. We shall, therefore, have to consider how best the private undertaking can be kept in touch with public opinion, and how in the last resort public opinion can dominate private management and cure its aberrations.

(To be continued.)

#### DEMURRAGE COLLECTIONS IN CALIFORNIA AND ELSEWHERE.

E. E. Mote, manager of the Pacific Car Demurrage Bureau, San Francisco, has issued his seventeenth monthly report on the working of the law of California, under which \$6 a day is collected on cars detained by consignees; and in connection with the figures for his own state he makes some interesting comments on the working of the code of demurrage rules which was recently endorsed by the Interstate Commerce Commission. The following is the substance of the introductory portion of Mr. Mote's report:

November, 1910, was the seventeenth full calendar month of the operation of a \$6 demurrage rate on state traffic in California and a \$1 rate on interstate traffic in the same state and on all traffic in other territory. Of cars subject to the \$6 rate reported in November by California agencies, 1.04 per cent. were held in excess of the free time, against 6.29 per cent. subject to the \$1 rate in the same state, and 5.88 per cent. in other territory. The average delay to \$6 cars after the expiration of the free time was 1.88 days per car; to \$1 cars in California 3.02 days per car, and in territory outside of California, 4.76 days per car. The results obtained in November are merely a repetition of those for the preceding sixteen months in showing that in proportion to the number of cars subject to each rate there were from five to six times as many \$1 cars held in excess of the free time as of \$6 cars.

Many inquiries having been made as to results from the ap-

plication of the National Demurrage Code which has now been generally adopted in territory outside of that of this bureau, we submit below a statement made from the monthly reports of fourteen other bureaus, all of which we believe put into operation the National Code on or before September 1, 1910, comparing the uncollected demurrage outstanding at the close of that month with the same month of 1909 (before their adoption of the National Code). There is probably no other single feature of demurrage regulations that so clearly reflects their efficiency as the proportion of demurrage charges that is actually collected.

In the bureaus named, the increases in uncollected, ranging from 11 to 268 per cent., an average of 81 per cent. in September, 1910, over the corresponding month of the previous year, are little short of startling, considering that the increases in the total amounts charged and collected were but 24 and 29 per cent., respectively.

Before the preparation of this statement it was assumed that because of the "average plan" of the National Code (which provides that no charge shall be taken into account until the end of the calendar month, and then only when the "debits" exceed the "credits") the uncollected charges would be greatly reduced; but since it appears that the uncollected has increased in spite of the "average plan," it follows clearly that some other causes are responsible for this state of things.

Our own theory is that these increases in uncollected are largely due to the "weather interference" and "bunching" clauses of Rule 8, of the National Code. Section 1 makes it possible to defer or avoid payment by the mere claim of the consignee that because of the weather he was unable to employ men or teams to load or unload, or that in process of removal to or from the cars the freight would be seriously injured. In the language of E. E. Clark, Interstate Commerce Commissioner, "Who is to say that the inclemency of the weather was or was not such as to entitle the consignee to exemption?" "How can any person decide that question and keep free from charges of discrimination?"

If the consignee secures possession of his freight and then refuses to pay demurrage on the plea, however unreasonable, of weather interference, what is the carrier going to do about it?

Section 2, of Rule 8, also makes it possible to defer or avoid the payment of demurrage upon the mere claim of "bunching" by the consignee, and it being utterly impossible to determine the question in ninety-nine cases out of one hundred within the free time, the consignee having possession of the freight, has as with the weather rule "nine points of the law in his favor," and may and, as we are reliably informed, generally does tell the carrier to "whistle for the money."

If these unsatisfactory results are possible under the supervision of demurrage managers with experienced and well-trained forces, it is safe to say that the conditions must be much worse in such sections of the country as have abolished demurrage bureaus leaving the supervision of the work with the individual road; although as to this we have no means of securing accurate information.

#### UNCOLLECTED DEMURRAGE AT CLOSE OF SEPTEMBER.

Name of Bureau.	Uncollected		Increase	
	1909.	1910.	Amount.	Per Cent.
Baltimore & Wash...	\$2,182	\$4,145	\$1,963	90
Central (St. Louis)...	10,027	20,966	10,939	109
Chicago .....	95,698	174,337	78,639	82
Illinois & Iowa.....	29,073	69,136	40,063	137
Intermountain .....	5,360	9,184	3,824	71
Mo. Valley, Ks. City	27,453	52,766	25,313	92
Montana .....	8,133	12,999	4,866	60
No. East Penna.....	10,977	12,169	1,192	11
Pac. No. West.....	4,301	15,829	11,528	268
Pittsburg .....	47,106	69,975	22,869	48
Va. & West Va.....	2,821	5,095	2,274	80
Western (Omaha)...	21,540	39,615	18,075	84
Western N. Y.....	52,380	80,893	28,513	54
Wisconsin .....	31,949	65,398	33,449	105
Total .....	\$349,000	\$632,517	\$283,517	81
Pacific .....	\$9,584	\$5,409	Decrease. \$4,175	43

\*If there ever was a case in which we were entitled to look for economy out of concentration of administration, it was when the eight London Water Companies were bought up by a public authority. Yet the representative of the Metropolitan Board confessed to a Parliamentary Committee in the Session of 1907 that the actual administration expenses were more under the one Board than they had been under the eight Companies.



## PAUL MORTON.

Paul Morton, for years prominent in railway service, from July 1, 1904, to July 1, 1905, secretary of the navy in the cabinet of President Roosevelt, and since 1905 president of the Equitable Life Assurance Society, died in New York on January 19.

Commenting on Mr. Morton's death, ex-President Roosevelt said: "To him, more than any one man, we owed the information that enabled the government definitely to break up the practice of giving rebates by the railways, and this service was one which he alone among the railway men was willing, at small cost to himself, to render to the public; and for it he is entitled to the grateful remembrance of all men who deem it of prime importance to see the law justly and rightly enforced."

These statements of Mr. Roosevelt are characteristically exaggerated. They imply that Mr. Morton was the only railway man who was willing effectively to co-operate with the government in stopping rebating. The Roosevelt administration and other administrations have received the earnest co-operation of other railway men in abating this and other railway evils. But it probably is true that Mr. Morton does deserve credit for having done more than any other railway executive to bring about the cessation of rebating. When he became vice-president in charge of traffic of the Atchison, Topeka & Santa Fe in 1896 he felt strongly that the time had come when the railways must co-operate with each other and with the public authorities in ending the pernicious practice; both because its suppression was necessary to conserve railway revenues and because its continuance was bound to get the railways into serious trouble with the public. Along with other railway officers he held many conferences with public officials both before and after the passage of the Elkins act, with a view to bringing about some arrangement under which rebating might be stopped. It was the irony of fate that after he had become a cabinet officer, Judson Harmon of Ohio and Frederick N. Judson of St. Louis, attorneys appointed by the government to investigate alleged unlawful discrimination by the Santa Fe in favor of the Colorado Fuel & Iron Company, should have made a report indicating that rebates had been paid and holding Mr. Morton responsible. As is well known, Mr. Roosevelt refused to allow criminal proceedings to be instituted.

That Mr. Morton should have labored to bring about the cessation of rebating and that he should have been, as the public believes, at the same time authorizing the giving of rebates, may seem to the public a remarkable inconsistency. As a matter of fact, it is questionable whether any infraction of law was involved in the relations between the Santa Fe and the Colorado Fuel & Iron Company. But whatever may have been the facts about this case, Mr. Morton himself would have been the last to deny that while advocating suppression of rebates he was

authorizing their giving. For, like numerous other railway men, he was the victim of the conditions of his time. A great majority of railway managers wanted to stop rebating. But there were some who were not so anxious to do so, and competitions repeatedly forced those who did want to stop them to continue them.

Mr. Morton's rise in the business world was very rapid. He was but 39 years old when, on the election of E. P. Ripley as president of the Santa Fe in 1896, he was brought by Mr. Ripley to the road as third vice-president. The Atchison had only recently emerged from a receivership. Under Mr. Ripley's administration it has been raised from a bankrupt property in decrepit physical condition to one of the great railways of the world. Mr. Morton was in the road's service during the eight years of Mr. Ripley's administration when the important work

of putting the road on its feet was being done, and to his diplomacy in dealing with the public along its lines and the ability with which he guided its traffic department was in large measure due its rapid increase in prosperity. He was a railway diplomatist of a high order. Years before most railway executives began to take the public into their confidence, it was his custom when riding over the line to see and talk freely with all newspaper men that asked to see him. The consequence was that he was exceedingly popular in almost every newspaper office along the lines of the Santa Fe, and that this helped to popularize the Santa Fe itself goes without saying. His relations with business men and politicians along the line were equally friendly. He was a loyal friend to all who deserved his friendship, which largely accounts for the fact that he had loyal friends.

Mr. Morton was born at Detroit, Mich., May 22, 1857. He was a son of J. Sterling Morton, who subsequently, while a citizen of Nebraska, was made Secretary of Agriculture of the United States by President Cleveland. He began railway work in De-



Paul Morton.

cember, 1872, as a clerk in the land office of the Burlington & Missouri River at Burlington, Iowa. He continued with this road and its successor, the Chicago, Burlington & Quincy, until February, 1890, having been made assistant general freight agent when he was but 21 years old. Four years later he was made first assistant general freight agent. He was next made general passenger agent. He was appointed general freight agent in 1888, and in February, 1890, when but 33 became president of the Colorado Fuel & Coal Company, the Southern Iowa Railway and the Illinois Western Railway. He was elected third vice-president of the Atchison, Topeka & Santa Fe in January, 1896, and from February, 1898, to July, 1904, was second vice-president, when he became a member of Mr. Roosevelt's cabinet. From July, 1905, until the time of his death he was president and chairman of the Equitable Life Assurance Society of the United States.

# THE INTERSTATE COMMERCE COMMISSION'S EXHIBIT OF OPERATING STATISTICS.

The accompanying table showing an analysis of the operating statistics of the New York Central & Hudson River was prepared under the direction of the Interstate Commerce Commission in connection with its inquiry into advances in rates. The other tables show an analysis of operating expenses for repairs

and renewals and an analysis of freight service operating statistics of the roads that were selected by the Interstate Commerce Commission. The exhibits prepared by the Interstate Commerce Commission are, of course, as complete for all roads as that shown here for the New York Central & Hudson River, and the figures shown herewith for the other railways are simply abstracts of the complete Interstate Commerce Commission figures.

## New York Central & Hudson River.

YEAR ENDED JUNE 30—	I. G. Analysis of operating expenses for rails, ties, and bridges and culverts.																													
	Rails.										Ties.																			
	New rails laid during the year					Expense of renewals of rails					New ties laid during the year					Expense of renewals of ties														
	Number of miles operated exclusive of track rights.		Total number of train miles.		Total cost.	Per mile main track.		Per train mile.		Total.	Per mile main track.		Per train mile.		Number of ties.		Total cost.	Per mile main track.		Per train mile.										
Miles of road.	Miles of main track.	Number of tons.	Total cost.	Tons.	Cost.	Tons.	Cost.	Total.	Per mile main track.	Per train mile.	Number of ties.	Total cost.	Number of ties.	Cost.	Total.	Per mile main track.	Per train mile.	Total.	Per train mile.											
Ten-year average, 1901-1910.....	3,256	5,305	45,588,551	46,868.6	\$1,333,752	9.0	\$256	0.00103	Cent. 2.93	\$681,700	\$131	1.50	1,623,625	\$979,247	312	\$188	0.036	Cent. 2.15	\$1,199,769	\$230	Cent. 2.63	\$770,394	Cent. 1.69							
Five-year average, 1906-1910.....	3,326	5,401	47,709,762	48,286.4	1,470,983	9.7	272	0.0010	3.06	777,549	144	1.63	1,741,178	1,099,102	322	213	0.037	2.41	1,369,937	254	2.72	775,751	1.62							
1901-1905.....	3,186	5,048	43,867,340	41,450.8	1,196,321	8.3	239	0.00080	2.75	686,850	117	1.35	1,506,073	809,103	301	162	0.035	1.86	1,029,481	206	2.37	768,038	1.77							
As reported for 1910.....	3,325	5,321	50,546,138	64,543.5	1,830,454	11.7	332	0.00128	3.62	837,968	152	1.66	2,124,876	1,391,681	363	252	0.042	2.75	1,647,612	298	3.26	816,727	1.21							
1909.....	3,325	5,460	48,240,040	64,158.6	1,909,669	11.1	329	0.00125	3.71	818,554	147	1.75	2,148,564	1,346,504	351	210	0.035	2.48	1,549,201	276	3.27	835,262	1.77							
1908.....	3,325	5,401	47,875,401	58,696.5	1,653,722	10.0	303	0.00123	3.46	796,992	94	1.06	2,087,797	1,509,333	380	276	0.043	3.13	1,599,337	294	3.34	900,578	1.82							
1907.....	3,326	5,304	47,985,164	51,983.0	1,453,965	9.8	274	0.00109	3.04	667,560	113	1.25	1,506,638	929,168	294	175	0.032	1.94	1,035,391	191	2.12	807,758	1.78							
1906.....	3,327	5,264	46,122,064	41,726.0	1,165,618	7.9	231	0.00090	2.33	1,137,862	215	2.47	1,364,214	778,312	282	168	0.031	1.69	1,077,973	204	2.34	1,645,408	3.04							
1905.....	3,327	5,276	44,993,077	51,817.9	1,464,633	9.8	278	0.00115	3.26	798,906	130	1.76	1,737,879	998,824	329	187	0.039	2.19	1,215,587	204	2.79	1,227,654	2.73							
1904.....	3,291	5,188	44,661,612	44,590.2	1,256,715	8.6	242	0.00070	2.81	711,258	137	1.59	1,102,723	643,093	213	124	0.025	1.44	1,055,214	263	2.36	740,704	1.46							
1903.....	3,279	5,137	46,487,498	53,208.8	1,635,324	6.9	182	0.00071	2.01	666,885	88	1.09	1,714,153	911,939	334	177	0.037	1.96	1,102,866	215	2.37	743,219	1.60							
1902.....	3,212	5,055	44,708,092	34,950.4	970,922	6.9	192	0.00078	2.17	511,616	101	1.14	1,641,148	807,945	325	169	0.037	1.81	915,477	161	2.04	686,386	1.54							
1901.....	3,239	4,964	36,435,731	42,696.7	1,354,449	9.7	300	0.00117	3.71	406,557	93	1.11	1,334,360	694,225	304	158	0.037	1.90	840,941	182	2.36	446,833	1.21							
J. Analysis of operating expenses for repairs and renewals.																														
YEAR ENDED JUNE 30—	Locomotives.										Passenger-train cars.										Freight-train cars.									
	Number of locomotives.		Total expense.		Number of cars-miles.		Total expense.		Per mile run.		Number of cars-miles.		Total expense.		Per mile run.		Number of cars-miles.		Total expense.		Per mile run.									
	Number of locomotives.		Total expense.		Number of cars-miles.		Total expense.		Per mile run.		Number of cars-miles.		Total expense.		Per mile run.		Number of cars-miles.		Total expense.		Per mile run.									
	Number of locomotives.		Total expense.		Number of cars-miles.		Total expense.		Per mile run.		Number of cars-miles.		Total expense.		Per mile run.		Number of cars-miles.		Total expense.		Per mile run.									
Ten-year average, 1901-1910.....	65,340,600	\$4,454,905	Cent. 6.86	133,072,050	\$1,962,056	Cent. 1.17	724,632,347	\$4,700,238	Cent. 0.66	42,990,623	\$6,125,289	Cent. 14.25	83,613,773	Cent. 8.41	\$4,005,155	9.32	\$702,250	Cent. 1.84	2,237,447	444,232	13,164	Per cent. 33.15	Per cent. 38.45							
Five-year average, 1906-1910.....	68,122,868	5,339,365	7.82	141,713,318	1,709,508	1.18	768,713,647	6,305,334	7.79	45,604,615	7,312,807	16.04	9,176,232	8.94	4,668,945	10.24	1,120,163	2.46	2,415,783	486,765	13,304	32.30	40.28							
1901-1905.....	62,508,641	3,641,446	5.82	122,630,752	1,414,603	1.15	680,531,046	5,375,142	6.61	40,376,431	4,937,669	12.03	23,351,317	7.81	3,341,365	8.28	1,038,111	2.46	1,939,111	401,698	13,014	34.28	36.01							
As reported for 1910.....	71,238,113	5,502,763	7.72	154,800,025	1,763,832	1.14	818,268,884	7,248,248	9.00	48,047,594	7,668,997	15.96	9,257,721	8.96	5,265,011	10.96	1,042,767	2.17	2,548,051	517,686	14,088	34.17	42.04							
1909.....	64,484,545	4,836,912	7.53	133,171,561	1,601,391	1.09	760,967,042	7,525,561	9.80	43,531,412	6,875,192	15.50	7,172,881	8.51	4,713,751	10.72	1,272,881	2.67	2,293,914	474,153	12,863	36.47	44.54							
1908.....	65,155,251	4,329,800	6.65	138,628,851	1,556,799	1.05	785,792,513	7,000,068	8.62	43,715,253	6,126,082	17.88	4,317,362	9.49	4,926,575	10.84	1,445,471	2.99	2,332,252	478,933	13,343	31.10	35.49							
1907.....	70,204,940	5,823,012	8.28	146,531,691	1,992,204	1.36	785,083,096	9,927,395	75.75	48,048,502	7,773,705	18.98	4,375,538	9.56	4,462,663	9.75	1,007,467	2.20	2,508,407	498,744	13,837	30.01	40.27							
1906.....	66,441,641	4,934,546	7.43	146,434,432	1,571,515	1.12	780,832,406	6,637,379	79.40	44,942,925	6,116,611	13.79	3,556,973	8.54	3,936,726	8.87	927,928	1.87	2,306,293	464,309	12,883	35.96	41.93							
1905.....	66,130,668	4,735,155	7.15	135,532,827	1,186,469	0.87	710,905,940	6,837,916	53.61	42,679,594	5,761,337	13.50	3,548,217	8.31	6,336,423	11.01	1,638,633	3.19	2,128,428	422,617	12,247	35.97	35.93							
1904.....	69,724,648	3,630,610	5.16	131,074,815	1,364,194	1.04	698,514,240	4,757,908	69.42	41,940,265	5,749,157	13.71	3,377,536	8.53	5,633,421	8.66	349,479	0.31	1,997,650	417,100	12,797	32.50	37.03							
1903.....	68,130,668	3,630,610	5.16	131,074,815	1,364,194	1.04	698,514,240	4,757,908	69.42	41,940,265	5,749,157	13.71	3,377,536	8.53	5,633,421	8.66	349,479	0.31	1,997,650	417,100	12,797	32.50	37.03							
1902.....	64,629,128	3,630,610	5.16	131,074,815	1,364,194	1.04	698,514,240	4,757,908	69.42	41,940,265	5,749,157	13.71	3,377,536	8.53	5,633,421	8.66	349,479	0.31	1,997,650	417,100	12,797	32.50	37.03							
1901.....	52,683,773	2,597,940	4.93	95,739,250	1,365,281	1.43	596,536,494	1,759,355	30.30	33,094,537	3,463,213	10.22	2,249,634	6.64	2,461,390	7.26	308,752	0.91	2,042,106	322,362	12,586	32.92	32.93							
K. Analysis of freight service operating statistics.																														
YEAR ENDED JUNE 30—	Average number of miles of road operated, including track rights.										Average number of miles of freight hauled.										Average number of miles of freight hauled.									
	Number of freight and mixed train miles.		Freight and mixed train miles per mile of road.		Average number of loaded freight cars per train mile.		Average number of loaded freight cars per train mile.		Average number of loaded freight cars per train mile.		Number of freight and mixed train miles.		Freight and mixed train miles per mile of road.		Average number of loaded freight cars per train mile.		Average number of loaded freight cars per train mile.		Average number of loaded freight cars per train mile.		Number of freight and mixed train miles.		Freight and mixed train miles per mile of road.		Average number of loaded freight cars per train mile.		Average number of loaded freight cars per train mile.		Average number of loaded freight cars per train mile.	
	Number of freight and mixed train miles.		Freight and mixed train miles per mile of road.		Average number of loaded freight cars per train mile.		Average number of loaded freight cars per train mile.		Average number of loaded freight cars per train mile.		Number of freight and mixed train miles.		Freight and mixed train miles per mile of road.		Average number of loaded freight cars per train mile.		Average number of loaded freight cars per train mile.		Average number of loaded freight cars per train mile.		Number of freight and mixed train miles.		Freight and mixed train miles per mile of road.		Average number of loaded freight cars per train mile.		Average number of loaded freight cars per train mile.		Average number of loaded freight cars per train mile.	
	Number of freight and mixed train miles.		Freight and mixed train miles per mile of road.		Average number of loaded freight cars per train mile.		Average number of loaded freight cars per train mile.		Average number of loaded freight cars per train mile.		Number of freight and mixed train miles.		Freight and mixed train miles per mile of road.		Average number of loaded freight cars per train mile.		Average number of loaded freight cars per train mile.		Average number of loaded freight cars per train mile.		Number of freight and mixed train miles.		Freight and mixed train miles per mile of road.		Average number of loaded freight cars per train mile.		Average number of loaded freight cars per train mile.		Average number of loaded freight cars per train mile.	
Ten-year average, 1901-1910.....	3,463	30,033,376	5,785	24.09	385.59	16.00	2,237,447	167.50	1,944	Tons = 26,536	Tons = 13.6	1,039	64,609	= 2,075,462	= 32.1	Tons = 1,997	62.3	342,008	117,566	6,657	132,821	58,335	Cent. 1.747							
Five-year average, 1906-1910.....	3,586	31,138,783	5,893	24.44	406.38	16.72	2,415,783	177.29	2,104	31,388	14.3	1,173	67,662	2,271,732	33.6	1,937	57.7	255,277	123,137	6,254	141,802	61,577	1.729							
1901-1905.....	3,340	18,947,968	5,670	23.73	365.80	15.29	2,059,111	177.21	1,094	9,237,475	12.1	904	61,735	1,825,995	29.6	1,624	68.3	228,739	111,996	6,029	123,446	55,002	1.753							
As reported for 1910.....	3,588	22,035,625	6,141	24.04	413.19	16.56	2,548,051	195.17	2,223	34,751	15.0	1,224	68,715	2,494,095	35.8	2,068	57.0	258,687	123,836	6,225	144,800	63,403	1.745							
1909.....	3,587	20,291,317	5,654	24.65	404.09	16.39	2,263,914	200.36	2,317	34,456	14.8	1,240	65,478	2,327,995	34.3	1,613	52.8	250,458	124,214	6,020	143,399	62,729	1.743							
1908.....	3,584	20,806,267	6,096	24.59	385.54	17.26	2,322,358	188.48	2,205	32,180	14.6	1,262	67,970	2,281,315	33.6	1,896	56.5	243,341	123,815	6,111	139,107	63,466	1.725							
1907.....	3,589	21,534,626	6,096	24.59	415.89	16.82	2,508,407	195.61	2,150	29,749	13.9	1,169	65,971	2,251,352	32.6	1,935	60.4	267,244	124,949	6,041	144,273	60,925	1.741							
1906.....	3,569	20,816,352	6,096	24.59	415.89	16.82	2,508,407	195.61	2,150	29,749	13.9	1,169	65,971	2,251,352	32.6	1,935	60.4	267,244	124,949	6,041	144,273	60,925	1.741							
1905.....	3,569	20,816,352	6,096	24.59	415.89	16.82	2,508,407	195.61	2,150	29,749	13.9	1,169	65,971	2,251,352	32.6	1,935	60.4	267,244	124,949	6,041	144,273	60,925	1.741							
1904.....	3,569	20,816,352	6,096	24.59	415.89	16.82	2,508,407	195.61	2,150	29,749	13.9	1,169	65,971	2,251,352	32.6	1,935	60.4	267,244	124,949	6,041	144,273	60,925	1.741							
1903.....	3,423	20,029,853	5,851	23.69	367.79	15.53	2,163,000	184.45	1,763	29,429	11.6	936	62,777	1,804,730	27.8	1,928	67.1	233,945	122,621	6,334	127,518	54,627	1.773							
1902.....	3,423	20,029,853	5,851	23.69	367.79	15.53	2,163,000	184.45	1,763	29,429	11.6	936	62,777	1,804,730	27.8	1,928	67.1	233,945	122,621	6,334	127,518	54,627	1.773							
1901.....	2,899	16,533,957	5,710	24.64	364.65	14.80	2,042,106	161.39	1,365	18,462	10.7	928	61,125	1,696,500																



CENTRAL RAILROAD CO. OF NEW JERSEY.				CHICAGO & ALTON RAILROAD CO.				CHICAGO & NORTHWESTERN RY. CO.			
	1901-1905.	1906-1910.	1910.	1901-1905.	1906-1910.	1910.		1901-1905.	1906-1910.	1910.	
Locomotives:											
Number of locomotive miles.	11,268,772	12,547,872	12,671,240	7,803,447	8,538,416	9,163,109		45,733,019	51,036,868	55,523,343	
Total expense	\$745,186	\$1,017,167	\$1,082,554	\$490,083	\$662,228	\$766,698		\$1,984,713	\$2,886,200	\$3,496,800	
Per mile run (cents)	6.61	8.11	8.54	6.28	7.76	8.37		4.34	5.65	6.30	
Passenger-train cars:											
Number of car miles	15,161,821	17,442,291	17,507,129	14,334,428	17,316,634	19,007,366		69,747,714	88,188,276	97,683,216	
Total expense	\$200,293	\$223,300	\$208,845	\$153,728	\$138,263	\$144,512		\$553,516	\$637,377	\$816,144	
Per mile run (cents)	1.32	1.28	1.19	1.07	.80	.77		.79	.72	.84	
Freight-train cars:											
Number of car miles	110,945,351	130,313,335	131,143,989	82,528,173	100,115,874	104,930,166		386,017,416	486,797,506	528,531,270	
Total expense	\$774,975	\$1,216,259	\$1,409,552	\$346,120	\$404,725	\$316,676		\$1,916,232	\$3,306,161	\$2,706,848	
Per mile run (cents)	.70	.93	1.07	.42	.40	.30		.50	.68	.51	
CHICAGO, BURLINGTON & QUINCY R. R. Co.				CHICAGO, MILWAUKEE & ST. PAUL RY. CO.				CHICAGO, ROCK ISLAND & PACIFIC RY. CO.			
	1901-1905.	1906-1910.	1910.	1901-1905.	1906-1910.	1910.		1901-1905.	1906-1910.	1910.	
Locomotives:											
Number of locomotive miles.	42,925,764	46,556,136	51,710,638	38,601,255	44,233,294	47,349,806		26,836,060	38,172,307	42,393,600	
Total expense	\$2,912,116	\$4,215,403	\$3,954,307	\$1,337,638	\$2,376,735	\$2,831,230		\$1,667,337	\$3,135,125	\$3,506,057	
Per mile run (cents)	6.79	9.07	7.65	3.46	5.37	5.98		6.21	8.21	8.27	
Passenger-train cars:											
Number of car miles	72,681,270	93,720,282	109,789,231	52,406,996	70,786,929	77,547,500		49,455,824	80,947,112	90,947,010	
Total expense	\$697,373	\$866,996	\$833,633	\$562,010	\$652,088	\$630,500		\$420,328	\$682,734	\$767,472	
Per mile run (cents)	.96	.93	.76	1.07	.92	.81		.85	.84	.84	
Freight-train cars:											
Number of car miles	453,490,037	571,438,711	637,163,521	417,200,346	483,517,544	497,100,460		261,485,974	372,670,659	418,236,167	
Total expense	\$3,539,658	\$5,402,923	\$4,925,473	\$1,940,672	\$3,216,054	\$2,980,075		\$1,290,256	\$2,434,545	\$2,902,382	
Per mile run (cents)	.78	.95	.77	.47	.67	.60		.49	.65	.69	
DELAWARE, LACKAWANNA & WESTERN R. R. Co.				ERIE RAILROAD CO.				LEHIGH VALLEY RAILROAD CO.			
	1901-1905.	1906-1910.	1910.	1901-1905.	1906-1910.	1910.		1901-1905.	1906-1910.	1910.	
Locomotives:											
Number of locomotive miles.	22,301,150	21,692,097	19,698,159	29,162,865	29,333,982	29,807,613		19,318,212	21,435,686	21,906,365	
Total expense	\$946,466	\$1,191,598	\$1,330,922	\$2,726,541	\$3,640,888	\$3,148,687		\$2,004,018	\$2,314,724	\$1,967,135	
Per mile run (cents)	4.24	5.49	6.76	9.35	12.41	10.56		10.37	10.80	8.98	
Passenger-train cars:											
Number of car miles	30,900,362	36,055,452	36,882,902	39,124,734	47,962,682	52,290,223		20,275,826	23,300,687	24,345,811	
Total expense	\$364,811	\$496,786	\$547,482	\$554,275	\$564,920	\$668,407		\$339,888	\$313,804	\$263,522	
Per mile run (cents)	1.18	1.38	1.48	1.42	1.18	1.28		1.68	1.35	1.08	
Freight-train cars:											
Number of car miles	191,776,172	236,438,966	249,156,416	373,528,604	378,160,217	380,952,625		283,540,906	309,829,215	308,461,307	
Total expense	\$1,107,352	\$1,462,206	\$1,489,294	\$1,859,714	\$2,892,362	\$2,892,640		\$1,965,988	\$2,342,399	\$2,442,539	
Per mile run (cents)	.58	.62	.60	.50	.77	.76		.69	.76	.79	
MINNEAPOLIS & ST. LOUIS RAILROAD Co.				NEW YORK, NEW HAVEN & HARTFORD R. R. Co.				PENNSYLVANIA RAILROAD CO.			
	1901-1905.	1906-1910.	1910.	1901-1905.	1906-1910.	1910.		1901-1905.	1906-1910.	1910.	
Locomotives:											
Number of locomotive miles.	2,075,057	2,794,385	3,362,691	29,422,626	30,976,816	29,637,868		77,907,700	92,958,644	94,960,634	
Total expense	\$116,428	\$178,440	\$231,262	\$1,729,366	\$2,293,954	\$2,351,653		\$6,013,259	\$9,075,853	\$9,549,701	
Per mile run (cents)	5.62	6.40	6.88	5.88	7.41	7.93		7.72	9.76	10.05	
Passenger-train cars:											
Number of car miles	4,531,373	5,313,512	5,870,295	63,449,546	71,140,826	73,015,820		108,896,192	136,635,306	143,295,025	
Total expense	\$35,704	\$52,821	\$63,588	\$1,032,113	\$1,068,363	\$983,074		\$1,824,145	\$2,075,064	\$1,966,142	
Per mile run (cents)	.79	.99	1.08	1.63	1.51	1.35		1.67	1.52	1.37	
Freight-train cars:											
Number of car miles	16,960,643	21,753,876	25,005,364	186,973,851	200,153,004	210,448,114		950,983,640	1,134,748,418	1,189,337,685	
Total expense	\$121,666	\$205,820	\$198,607	\$1,022,819	\$1,218,461	\$1,382,576		\$8,295,460	\$10,799,823	\$10,562,966	
Per mile run (cents)	.72	.95	.80	.55	.61	.66		.87	.95	.89	
PHILADELPHIA & READING RY. CO.				TOLEDO, ST. LOUIS & WESTERN R. R.				WABASH RAILROAD CO.			
	1901-1905.	1906-1910.	1910.	1901-1905.	1906-1910.	1910.		1901-1905.	1906-1910.	1910.	
Locomotives:											
Number of locomotive miles.	26,378,016	26,904,425	26,196,000	3,448,719	3,207,624	2,815,241		20,466,047	20,976,828	20,987,147	
Total expense	\$1,760,351	\$2,695,979	\$2,823,160	\$175,463	\$220,832	\$238,443		\$1,279,575	1,601,537	1,851,900	
Per mile run (cents)	6.70	10.02	10.78	5.09	6.88	8.47		6.25	7.63	8.82	
Passenger-train cars:											
Number of car miles	25,097,753	27,157,664	28,350,462	3,472,258	3,332,487	3,170,631		37,882,386	37,908,700	37,455,473	
Total expense	\$353,660	\$640,809	\$1,049,074	\$30,185	\$27,023	\$23,106		\$450,846	339,574	331,863	
Per mile run (cents)	1.41	2.36	3.70	.87	.81	.73		1.19	.90	.89	
Freight-train cars:											
Number of car miles	291,690,357	307,251,277	307,251,277	40,478,939	48,188,456	44,382,071		189,689,161	254,239,999	271,658,389	
Total expense	\$1,885,657	\$3,524,144	\$4,083,925	\$162,966	\$155,043	\$262,475		\$1,107,894	\$1,404,972	\$1,407,647	
Per mile run (cents)	a 1.21	a 1.21	1.33	.40	.32	.23		.58	.55	.52	

a Three-year average, years ended June 30, 1908-1910.

## ANALYSIS OF FREIGHT SERVICE OPERATING STATISTICS.

ATCHISON, TOPEKA & SANTA FE RY. CO.				BALTIMORE & OHIO R. R. Co.			
	1901-1905.	1906-1910.	1910.	1901-1905.	1906-1910.	1910.	
Average number of miles of road operated, including trackage rights.	5,803	7,163	7,459	3,678	4,096	4,434	
Number of freight and mixed train miles.	13,161,108	17,408,378	18,947,388	20,281,145	24,969,169	27,152,441	
Freight and mixed train miles per mile of road.	2,268	2,431	2,540	5,514	6,089	6,124	
Average number of loaded freight cars per train mile.	18.92	22.22	20.87	19.47	18.94	19.34	
Average number of tons of revenue freight:							
Per train load.	261.18	306.34	298.39	399.32	425.12	442.86	
Per loaded car.	13.00	14.97	14.30	20.51	22.45	22.90	
Average number of tons of revenue freight hauled over each mile of road.	594.094	749,619	757,977	2,207,898	2,591,372	2,711,666	
Average number of miles hauled.	320.58	371.89	353.11	196.54	193.81	191.48	
Total number of locomotives in service June 30.	1,121	1,545	1,596	1,579	1,897	2,055	
Total tractive power on June 30 (tons).	b 14,586	23,233	24,518	b 22,438	29,321	32,125	
Average tractive power per locomotive on June 30 (tons).	b 12.1	15.0	15.4	b 14.3	15.5	15.7	
Number of locomotives assigned to freight service June 30.	765	869	866	1,035	1,348	1,475	
Total number of freight cars in service June 30.	31,876	42,369	44,584	71,497	79,690	83,693	
Total capacity of freight cars in service June 30 (tons).	b 862,316	1,253,818	1,392,300	b 2,349,657	2,899,295	3,149,792	
Average capacity of freight cars in service June 30 (tons).	b 25.6	29.5	31.2	b 32.9	36.4	37.7	
Freight car capacity per loco. assigned to freight service June 30 (tons).	b 1,055	1,444	1,608	b 2,227	2,151	2,135	
Number of freight cars per locomotive assigned to freight service June 30.	41.7	48.8	51.5	67.8	59.4	56.9	

b Four-year average, years ended June 30, 1902-1905.

	BOSTON & MAINE R. R.			CENTRAL R. R. CO. OF NEW JERSEY.		
	1901-1905.	1906-1910.	1910.	1901-1905.	1906-1910.	1910.
Average number of miles of road operated, including trackage rights.....	2,275	2,261	2,243	688	668	669
Number of freight and mixed train miles.....	8,250,351	9,347,021	9,487,146	3,307,591	4,007,991	4,130,504
Freight and mixed train miles per mile of road.....	3,627	4,134	4,230	4,815	6,002	6,174
Average number of loaded freight cars per train mile.....	16.67	16.45	17.15	20.28	19.38	19.06
Average number of tons of revenue freight:						
Per train load.....	205.13	234.03	247.33	470.11	511.18	517.36
Per loaded car.....	12.32	14.22	14.42	23.15	26.40	27.15
Average number of tons of revenue freight hauled over each mile of road.	750,191	975,068	1,046,212	2,276,868	3,068,051	3,192,394
Average number of miles hauled.....	89.34	100.35	102.84	79.52	75.68	72.39
Total number of locomotives in service June 30.....	987	1,079	1,119	438	481	477
Total tractive power on June 30 (tons).....	b 8,489	10,513	c 11,458	b 4,479	5,865	5,923
Average tractive power per locomotive on June 30 (tons).....	8.6	9.7	c 10.3	b 10.2	12.1	12.4
Number of locomotives assigned to freight service June 30.....	378	416	446	254	258	253
Total number of freight cars in service June 30.....	17,281	22,376	24,746	18,828	20,795	21,968
Total capacity of freight cars in service June 30 (tons).....	b 382,274	599,504	722,200	b 578,344	726,336	816,445
Average capacity of freight cars in service June 30 (tons).....	22.1	26.8	29.2	b 30.7	34.9	37.1
Freight car capacity per loco. assigned to freight service June 30 (tons).....	1,011	1,441	1,619	b 2,277	2,815	3,227
Number of freight cars per locomotive assigned to freight service June 30.....	45.7	53.8	55.5	74.1	80.6	86.8

b Four-year average, years ended June 30, 1902-1905. c Data for 1,109 locomotives.

	CHICAGO & ALTON R. R. CO.			CHICAGO & NORTHWESTERN RY. CO.		
	1901-1905.	1906-1910.	1910.	1901-1905.	1906-1910.	1910.
Average number of miles of road operated, including trackage rights.....	917	986	998	6,520	7,575	7,629
Number of freight and mixed train miles.....	2,986,001	3,267,301	3,558,625	15,863,489	19,311,616	21,336,510
Freight and mixed train miles per mile of road.....	3,257	3,314	3,566	2,454	2,549	2,799
Average number of loaded freight cars per train mile.....	18.41	19.73	19.28	17.19	17.40	16.81
Average number of tons of revenue freight:						
Per train load.....	330.07	399.32	383.07	255.17	267.96	260.71
Per loaded car.....	17.91	20.24	19.86	14.85	15.41	15.51
Average number of tons of revenue freight hauled over each mile of road.	1,077,248	1,322,609	1,365,832	627,003	682,599	729,094
Average number of miles hauled.....	178.81	163.47	160.15	140.06	147.26	141.40
Total number of locomotives in service June 30.....	213	256	271	1,196	1,437	1,520
Total tractive power on June 30 (tons).....	b 2,640	3,551	4,027	b 11,154	15,154	17,185
Average tractive power per locomotive on June 30 (tons).....	b 12.4	13.9	14.8	9.3	10.5	11.3
Number of locomotives assigned to freight service June 30.....	108	136	151	717	855	859
Total number of freight cars in service June 30.....	9,705	11,116	12,084	47,136	58,189	62,639
Total capacity of freight cars in service June 30 (tons).....	b 305,016	416,872	479,748	b 1,340,610	b 1,847,874	2,100,770
Average capacity of freight cars in service June 30 (tons).....	b 31.5	37.5	39.7	28.4	31.7	33.5
Freight car capacity per loco. assigned to freight service June 30 (tons).....	b 2,825	3,065	3,177	1,870	2,161	2,445
Number of freight cars per locomotive assigned to freight service June 30.....	89.9	81.7	80.0	65.7	68.0	72.9

b Four-year average, years ended June 30, 1902-1905.

	CHICAGO, BURLINGTON & QUINCY R. R. Co.			CHICAGO, MILWAUKEE & ST. PAUL RY. Co.		
	1901-1905.	1906-1910.	1910.	1901-1905.	1906-1910.	1910.
Average number of miles of road operated, including trackage rights.....	8,177	8,899	9,023	6,854	7,396	7,512
Number of freight and mixed train miles.....	17,771,185	17,770,500	19,501,367	16,200,772	18,320,985	19,321,529
Freight and mixed train miles per mile of road.....	2,181	1,997	2,161	2,364	2,478	2,572
Average number of loaded freight cars per train mile.....	18.16	22.38	22.44	18.24	18.64	18.13
Average number of tons of revenue freight:						
Per train load.....	261.73	383.48	381.26	242.91	274.62	275.58
Per loaded car.....	14.30	17.14	16.99	13.31	14.74	15.20
Average number of tons of revenue freight hauled over each mile of road.	561,154	765,699	824,016	574,010	680,733	709,161
Average number of miles hauled.....	b 249.87	270.78	266.80	190.37	181.13	173.52
Total number of locomotives in service June 30.....	1,253	1,605	1,673	975	1,106	1,199
Total tractive power on June 30 (tons).....	b 12,596	18,893	20,273	b 8,355	10,977	12,840
Average tractive power per locomotive on June 30 (tons).....	b 10.1	11.8	12.1	b 8.6	9.9	10.7
Number of locomotives assigned to freight service June 30.....	737	888	857	609	703	782
Total number of freight cars in service June 30.....	45,238	48,903	49,881	39,980	44,591	44,868
Total capacity of freight cars in service June 30 (tons).....	b 1,162,235	1,487,408	1,673,925	b 1,057,821	1,375,093	1,422,491
Average capacity of freight cars in service June 30 (tons).....	b 25.7	30.4	33.6	b 26.5	30.8	31.6
Freight car capacity per loco. assigned to freight service June 30 (tons).....	b 1,577	1,676	1,953	b 1,737	1,956	1,819
Number of freight cars per locomotive assigned to freight service June 30.....	61.4	55.0	58.2	65.6	63.4	57.4

b Four-year average, years ended June 30, 1902-1905.

	CHICAGO, ROCK ISLAND & PACIFIC RY. Co.			DELAWARE, LACKAWANNA & WESTERN R. R. Co.		
	1901-1905.	1906-1910.	1910.	1901-1905.	1906-1910.	1910.
Average number of miles of road operated, including trackage rights.....	5,170	7,177	7,400	802	861	930
Number of freight and mixed train miles.....	11,634,848	14,982,248	16,683,695	6,208,496	6,935,072	6,742,112
Freight and mixed train miles per mile of road.....	2,307	2,088	2,255	7,743	8,055	7,249
Average number of loaded freight cars per train mile.....	15.52	17.28	17.19	20.92	22.72	24.36
Average number of tons of revenue freight:						
Per train load.....	201.72	258.16	257.83	403.86	492.56	545.14
Per loaded car.....	12.98	14.94	15.00	19.27	21.68	22.38
Average number of tons of revenue freight hauled over each mile of road.	460,245	538,815	581,272	3,136,030	3,925,998	3,951,580
Average number of miles hauled.....	230.83	236.62	229.58	162.75	172.61	170.13
Total number of locomotives in service June 30.....	902	1,348	1,430	638	704	755
Total tractive power on June 30 (tons).....	b 9,862	16,976	19,413	b 7,839	8,922	10,146
Average tractive power per locomotive on June 30 (tons).....	b 10.9	12.6	13.5	b 12.3	12.7	13.4
Number of locomotives assigned to freight service June 30.....	517	737	781	392	413	444
Total number of freight cars in service June 30.....	25,003	37,166	37,375	25,019	26,384	27,690
Total capacity of freight cars in service June 30 (tons).....	b 742,110	1,195,027	1,295,115	b 697,462	845,581	904,290
Average capacity of freight cars in service June 30 (tons).....	b 29.7	32.1	34.6	b 27.8	32.0	32.6
Freight car capacity per loco. assigned to freight service June 30 (tons).....	b 1,435	1,622	1,648	b 1,779	2,047	2,037
Number of freight cars per locomotive assigned to freight service June 30.....	48.4	50.4	47.8	63.8	63.8	62.3

b Four-year average, years ended June 30, 1902-1905.

	ERIE RAILROAD Co.			LEHIGH VALLEY R. R. Co.		
	1901-1905.	1906-1910.	1910.	1901-1905.	1906-1910.	1910.
Average number of miles of road operated, including trackage rights.....	1,884	1,921	1,961	1,391	1,441	1,440
Number of freight and mixed train miles.....	11,203,592	11,224,403	11,079,544	7,784,566	8,845,150	8,839,384
Freight and mixed train miles per mile of road.....	5,947	5,845	5,649	5,598	6,137	6,138
Average number of loaded freight cars per train mile.....	22.86	23.63	24.46	24.35	23.47	23.66
Average number of tons of revenue freight:						
Per train load.....	396.77	471.36	500.23	479.08	521.11	535.85
Per loaded car.....	17.35	19.93	20.32	19.67	22.24	22.65
Average number of tons of revenue freight hauled over each mile of road.	2,359,724	2,749,978	2,808,448	2,683,091	3,197,398	3,288,705
Average number of miles hauled.....	151.55	150.38	146.34	183.15	174.31	174.26
Total number of locomotives in service June 30.....	1,128	1,372	1,398	752	860	874
Total tractive power on June 30 (tons).....	b 13,304	19,097	20,052	b 8,967	11,557	12,127
Average tractive power per locomotive on June 30 (tons).....	b 11.7	13.9	14.3	b 11.9	13.4	13.9
Number of locomotives assigned to freight service June 30.....	597	706	745	433	484	492
Total number of freight cars in service June 30.....	50,762	51,018	48,350	35,095	41,651	44,125
Total capacity of freight cars in service June 30 (tons).....	b 1,430,127	1,818,263	1,809,900	b 1,039,650	1,427,608	1,603,127
Average capacity of freight cars in service June 30 (tons).....	b 28.1	35.6	37.4	b 29.6	34.3	36.3
Freight car capacity per loco. assigned to freight service June 30 (tons).....	b 2,446	2,576	2,429	b 2,771	2,939	3,258
Number of freight cars per locomotive assigned to freight service June 30.....	72.7	85.0	64.8	81.1	86.1	89.7

b Four-year average, years ended June 30, 1902-1905.



	MINNEAPOLIS & ST. LOUIS R. R. Co.			NEW YORK, NEW HAVEN & HARTFORD R. R. Co.		
	1901-1905.	1906-1910.	1910.	1901-1905.	1906-1910.	1910.
Average number of miles of road operated, including trackage rights.....	656	945	1,027	2,037	2,051	2,043
Number of freight and mixed train miles.....	731,274	1,026,037	1,212,635	7,219,077	7,528,091	7,246,504
Freight and mixed train miles per mile of road.....	1.115	1.086	1.181	3.544	3.671	3.547
Average number of loaded freight cars per train mile.....	18.81	16.17	15.26	19.25	18.52	20.01
Average number of tons of revenue freight:						
Per train load.....	255.00	250.06	266.80	215.07	256.07	293.20
Per loaded car.....	13.55	15.53	17.48	11.20	13.80	14.65
Average number of tons of revenue freight hauled over each mile of road.	285,485	271,940	315,008	762,103	939,813	1,057,560
Average number of miles hauled.....	101.77	101.32	107.62	89.35	93.09	93.44
Total number of locomotives in service June 30.....	82	96	103	1,017	1,199	1,220
Total tractive power on June 30 (tons).....	b 720	908	1,100	b 10,158	12,990	d 13,393
Average tractive power per locomotive on June 30 (tons).....	b 8.8	9.5	10.7	b 10.0	10.8	10.9
Number of locomotives assigned to freight service June 30.....	41	50	50	333	444	453
Total number of freight cars in service June 30.....	2,952	3,998	4,385	14,474	27,752	35,716
Total capacity of freight cars in service June 30 (tons).....	b 72,997	109,704	126,100	b 395,561	863,117	1,141,733
Average capacity of freight cars in service June 30 (tons).....	b 24.7	27.5	28.8	b 27.3	31.1	31.9
Freight car capacity per loco. assigned to freight service June 30 (tons).....	b 1,780	2,194	2,522	b 1,188	1,944	2,520
Number of freight cars per locomotive assigned to freight service June 30.....	72.1	80.0	87.7	43.5	62.5	78.6

b Four-year average, years ended June 30, 1902-1905. c Includes 44 electric locomotives unassigned as regards freight or passenger service.  
d Tractive power of 1,176 locomotives; no tractive power reported for 44 electric locomotives.

	PENNSYLVANIA R. R. Co.			PHILADELPHIA & READING RY. Co.		
	1901-1905.	1906-1910.	1910.	1901-1905.	1906-1910.	1910.
Average number of miles of road operated, including trackage rights.....	3,828	3,983	3,971	1,008	1,010	1,022
Number of freight and mixed train miles.....	27,400,235	32,660,488	31,422,531	10,235,955	9,883,958	9,647,409
Freight and mixed train miles per mile of road.....	7.158	8.200	7.913	10.155	9.786	9.439
Average number of loaded freight cars per train mile.....	22.27	23.23	24.14	.....	a 19.42	19.86
Average number of tons of revenue freight:						
Per train load.....	508.57	586.85	649.41	312.47	433.12	477.49
Per loaded car.....	22.87	25.44	26.90	.....	a 23.86	24.04
Average number of tons of revenue freight hauled over each mile of road.	3,637,091	4,782,232	5,139,379	3,147,560	4,210,122	4,506,980
Average number of miles hauled.....	148.55	167.81	168.43	91.86	94.44	97.12
Total number of locomotives in service June 30.....	2,564	3,431	c 3,439	907	1,017	1,032
Total tractive power on June 30 (tons).....	b 35,877	53,616	d 55,117	e 10,608	13,162	13,527
Average tractive power per locomotive on June 30 (tons).....	14.0	15.6	16.0	e 11.7	12.9	13.1
Number of locomotives assigned to freight service June 30.....	1,644	2,304	2,349	519	624	628
Total number of freight cars in service June 30.....	108,880	136,388	143,917	37,617	41,906	40,971
Total capacity of freight cars in service June 30 (tons).....	b 4,025,609	5,712,274	5,803,486	b 1,095,533	1,310,274	1,398,089
Average capacity of freight cars in service June 30 (tons).....	37.0	41.9	40.3	b 29.1	31.3	34.1
Freight car capacity per loco. assigned to freight service June 30 (tons).....	2,449	2,479	2,470	b 2,110	2,170	2,226
Number of freight cars per locomotive assigned to freight service June 30.....	66.2	59.2	61.3	72.5	69.4	65.2

a Three-year average, years ended June 30, 1908-1910. b Four-year average, years ended June 30, 1902-1905. c Includes 2 electrics. d Tractive power of 3,437 locomotives. e Three-year average, years ended June 30, 1903-1905.

	TOLEDO, ST. LOUIS & WESTERN R. R.			WABASH R. R. Co.		
	1901-1905.	1906-1910.	1910.	1901-1905.	1906-1910.	1910.
Average number of miles of road operated, including trackage rights.....	451	451	451	2,463	2,515	2,515
Number of freight and mixed train miles.....	1,503,765	1,375,120	1,287,399	7,306,402	8,766,831	9,429,662
Freight and mixed train miles per mile of road.....	3.334	3.049	2.855	2.966	3.486	3.749
Average number of loaded freight cars per train mile.....	18.50	24.46	24.98	18.59	19.92	19.81
Average number of tons of revenue freight:						
Per train load.....	285.39	455.19	481.31	291.03	354.67	352.70
Per loaded car.....	15.41	18.59	19.26	15.66	17.81	17.81
Average number of tons of revenue freight hauled over each mile of road.	956,563	1,379,187	1,374,787	863,271	1,236,452	1,322,598
Average number of miles hauled.....	215.20	196.40	191.22	228.57	241.47	237.51
Total number of locomotives in service June 30.....	86	97	94	504	620	658
Total tractive power on June 30 (tons).....	b 910	1,295	1,273	b 4,893	7,025	7,825
Average tractive power per locomotive on June 30 (tons).....	10.6	13.3	13.5	9.7	11.3	11.9
Number of locomotives assigned to freight service June 30.....	57	64	61	268	364	396
Total number of freight cars in service June 30.....	3,044	3,427	3,273	16,939	21,647	22,206
Total capacity of freight cars in service June 30 (tons).....	b 79,199	105,307	105,000	b 533,693	742,298	796,910
Average capacity of freight cars in service June 30 (tons).....	26.0	30.7	32.1	31.5	34.3	35.9
Freight car capacity per loco. assigned to freight service June 30 (tons).....	1,390	1,646	1,721	1,991	2,039	2,012
Number of freight cars per locomotive assigned to freight service June 30.....	53.4	53.6	53.7	63.2	59.5	56.1

b Four-year average, years ended June 30, 1902-1905.

## THE SUPPLY DEPARTMENT.\*

BY H. C. PEARCE.

General Storekeeper, Southern Pacific Company.

### IV.

#### REQUISITIONS AND ORDERS.

We have now the organization and facilities, and are prepared to do business.

#### Form of Regular Requisitions.

Each person having authority to order material should be required to make out a requisition on the form provided, and in the way instructed, and obtain the approvals prescribed. The form of requisition shown herewith contains only essentials, with ample room to describe what is wanted, and nothing except what is wanted. Instructions regarding the use of this requisition may be changed from time to time, but generally speaking the substance of these instructions is that the person making a requisition must state correctly and technically the thing he wants. In the case of requisitions for material regularly re-

quired, they must conform to the standards, as shown by the standard lists.

For the purpose of further identification, and to prevent mistakes, each item on the standard list should be indicated by an item number. This number indicates, not only the number of the item but the section in the storehouse in which it is located. Thus, 13-1 indicates that the item described is located in section 13, and is item 1 on the list. The list is arranged alphabetically and in sections, and also shows the technical description. They also should be required to show the actual amount on hand and amount due; and, in the case of stock requisitions, the average previous months' consumption. This information, together with complete shipping instructions, forms practically all the essential information that is required.

#### Form of Special Requisitions.

Special requisitions must be prepared to cover all special materials, tools, etc., which are not carried in stock, and are not shown on the standard lists, as indicated above. These requisitions, in addition to giving complete description of what is wanted, must indicate why it is wanted, and its approximate value, and be approved by the head of the department, with full explanation as to why it is required.

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File No.....  
Section No.....

**REQUISITION FOR MATERIAL.** NO.....

.....190....

TO..... AT.....

Please ship the following material to

Approved..... Approved..... At.....

Title..... Title.....

On Hand and On Order.	Average Monthly Consumption.	Additional Wanted.	Description of Material.	Purpose.	Leave Blank. For Accounting Purposes.

Form of Requisition for Material.

*Form of Stationery Requisitions.*

There is a separate requisition made for stationery, owing to the character of this material. Form numbers answer for item numbers, and, besides, stationery is usually ordered on basis of three months' supply. That is to say, the system is divided up in such a way that requisitions are made on the basis of each three months. This saves much unnecessary time in shipment, and has been found practical and profitable. A sample requisition is shown herewith. Only one form of requisition is necessary, of two different sizes, half and full sheets.

*Form of Shop Orders.*

A form of shop order is shown. It is used by the local shops in drawing material from the storehouses at all points. This order is made out usually by the shop foremen of the different shops, and can be made out in his own way, for the reason that he has not the time to study the standard lists, drawings and schedule references. Besides, the connections between the user and the material is such that all this information can be procured in another way, as will be explained later. At the shops, where the delivery system is installed, the order is telephoned to the section, and delivery made by messengers, who in turn take receipt when the material is delivered, and deliver the order

back to the section storekeeper, who in turn puts on the technical description and item reference from his stock books. In cases where the shop delivery system is not in use, and the men go to the counters and get the material, the counter foreman and section foreman in the storehouse enter the correct description on the tickets in the same way, so that when the tickets go into the office for accounting purposes, the description is technically correct and identified in the same manner as the requisitions.

*Regular Requisitions; Method of Handling.*

The requisitions, after being properly approved, are forwarded to the division store, they are identified by a number and registered, and show the date received, original number, file number, brief description of what it is for, and what was done with it. They are then checked against the available material, as shown on the stock lists, and notations made after such items as can be supplied from outside points. They are then arranged according to section and delivered to each section storekeeper, who first checks the column "Amount Due" to see that the back-orders which he has for this material agree with the amount which they show is due. For example, if their requisitions should show that they want one dozen hand saws with none due, and the section storekeeper found he held a back-

Form 2081.

C. S.  
Sheet No.....  
File No.....

**STATIONERY REQUISITION No.**.....

TO STATIONER:

The following supplies are required at.....for the.....ending.....

Approved:..... Approved:.....

[TITLE]..... [TITLE]..... [TITLE].....

**INSTRUCTIONS.**

1. Requisitions should be made on dates designated by proper official and should cover sufficient stationery to last until stock ordered on next requisition is received.
2. Requisitions should be written in copying ink or indelible pencil and an impression copy taken by the maker.
3. The "Number on Hand" at time of making requisition must be shown in the column provided for that purpose.
4. Blanks bearing form numbers must be listed in numerical order, followed by Miscellaneous Supplies.
5. DO NOT INTERLINE ON THIS BLANK. Use one line for each article.
6. When material called for by requisition is received, it should be checked with the impression copy, and any discrepancies noted thereon.

FORM.	DESCRIPTION.	Number on Hand.	Number Required.	VALUE.	REMARKS.

Form of Stationery Requisition.



order for one dozen, he would cancel the item, making notation to the effect after same that there was a dozen due that they did not know about. All duplications are discovered in this way. He then checks the descriptions against his stock books to see that the material is properly described and itemized, and at the same time compares the quantity ordered with his stock books, or what he is using himself of this class of material. If it shows extravagance, or is excessive, he makes notation after the item to this effect. In fact, the section storekeeper in the division store censures every item on a requisition for stock for the division, and is in effect general storekeeper of that division for his particular section. In the same way the section storekeeper of the general store censures all requisitions from the division stores for stock, and is general storekeeper of his particular section for the system.

His next move is to make a cross at the left of such items as he has in stock and provided for. The messenger then comes around and picks up the requisitions so marked, and then takes them back to the storekeeper, who personally goes over notations made by the section storekeepers, and makes such changes as he may desire, and indicates after the items on the requisitions which have not already been provided for, what action shall be taken. For example, one item he will mark "Purchase," another

in his possession before the material is received. These invoices are usually made in triplicate, one copy going to the consignee, one to the maker of the requisition (usually the superintendent), and the other remaining on file. The shipping notice, or manifest number and date, is then entered on the original requisition, and the requisitions filed numerically by divisions. The unfilled items on the requisitions are drawn off onto back-orders, and when these back-orders are filled they are handled in the same way, and attached to the original requisition, so that the original requisition in the storekeeper's office shows at all times its exact status, and can be located instantly by reference to the number or date.

*Special Requisitions: Method of Handling.*

Special requisitions when received at the division store are merely registered in the same way as regular requisitions, and forwarded to the general storekeeper, who obtains any additional approvals which may be necessary, and prepares at once a purchase requisition to cover, sending a copy of same to the division storekeeper so that he may be in position to advise division officers what action has been taken. In this way these requisitions are delayed no longer than is necessary to get the necessary approvals and time to check against what may be available

**ORDER ON STOREKEEPER**

TO STOREKEEPER:

Please deliver to bearer the following material:

C. S.

Charge Acct. No. .... Shop No. ....

To be used for. .... Store No. ....

.....

.....

Form 4218

### Form of Order on Storekeeper.

"Shop," meaning in the first instance it will be bought, and in the second it will be made in the shops.

The requisitions are then turned over to the requisition clerk, who first draws off transfer requisitions for such items as can be supplied from outside points where it is not needed; second, he makes requisitions on the purchasing agent for such items as it is necessary to purchase; third, makes store orders on the different shops for such material as must be made or repaired in the shops, indicating after these items the action taken, i. e., the order numbers and dates. The requisitions are then sent to the section storekeepers, and the preparation for shipment commences at once. Several different sections will thus be working on the same requisition at the same time.

As soon as the material is ready for shipment, the shipping foreman, who has already made arrangements for the necessary cars to load, is notified. The requisitions are taken up by him, the material checked into the cars and turned over to the agent, who is also located (in case of the general store) in the store for billing. The number and date of the waybill, car number, etc., is indicated on the requisition and turned over to the manifest clerk, who immediately makes the invoice from the original requisition, and mails it out. This work at the large stores is done at night, so that in all instances the consignee has a manifest

or can be supplied. They pass through the division stores and general store to prevent anything being bought which may be on hand or can be made applicable.

*Stationery Requisitions; Method of Handling.*

Stationery requisitions are prepared by the agents, approved by the superintendents, and, in the case of general officers, approved by the heads of the departments, and sent directly to the stationery storekeeper, who handles them in the same way as other requisitions.

### Shop Orders; Method of Handling.

Shop orders are checked over every night by the section storekeepers to see that the description and item references are technically correct, and delivered to the material clerk, where they are abstracted to their proper classes and charged to the proper operating accounts.

### Store Orders; Method of Handling.

Store orders for shop work to be done in the shops are made by the storekeeper of the shop under whose direction the material is to be made, and sent to the local mechanical official or shop superintendent, as may be directed, for approval. These

orders are all numbered and made in duplicate. Whatever material is necessary to do the work is ordered by him, and charged to his order, as well as the labor. When the article is completed the storekeeper, or store delivery foreman, is notified, takes the material away, and gives receipt for it, which is authority for the shop clerk to prepare bill for the value of same.

#### *Purchase Requisitions; Method of Handling.*

Requisitions are made on the purchasing agent *only after every other resource has been exhausted*. All purchase requisitions are made at the general store, and if for stock are based on the general stock books, which show the technical description of the material required with such schedule, drawings, pattern, and other references as may be necessary. This record also shows the quantities which have been purchased during the year or years, amount on hand and amount due. From this information the storekeeper determines the quantities necessary for him to provide, taking into consideration his personal knowledge of any changed or unusual conditions. The requisition is then prepared, checked again by the general stock clerk against the general stock books to be sure it is correct in every detail, certified to by him, approved by the division storekeeper and general storekeeper and forwarded to the purchasing agent for execution.

In the case of special requisitions the method of procedure is the same, except that all such requisitions are made in the office of the general storekeeper, and after the necessary approvals have been obtained from the heads of departments, and when necessary from the general manager or chief executive officer.

The purchasing agent upon receiving these requisitions, will, if covered by contract or agreement, indicate at once the proper contract reference. If the item or items are not covered by such agreement, requests for bids should be sent out immediately, stating the time the bids close. When such bids are received they are tabulated and the purchasing agent decides, and indicates by a circle the bid accepted. It is attached to the requisition and sent to the order clerk, from which orders are made in triplicate, one copy going to the seller, and the other to the storekeeper, and the other being filed with the requisition. The storekeeper upon receiving this copy checks it against the requisition and calls the purchasing agent's attention at once to any changes or errors which may have been detected. It is then sent to the section storekeeper, who will receive the goods, and it is attached to his duplicate copy of the requisition from which to check the specifications when the material is received.

#### RECEIPT AND INSPECTION.

##### *Purchase Bills.*

Purchase bills or invoices are supposed to be made by the seller on the dates the material is shipped, and sent in triplicate to the purchasing agent. These bills in all cases give reference to the orders and requisition numbers, and are first checked by the purchasing agents against the copy of the order to see that they agree in the matter of price, routing, etc., the triplicate being retained in his office, and the original and duplicate forwarded to the storekeeper. The storekeeper enters it against the item on the requisition record book, that is, he gives the date shipped, name of the shipper, amount of the invoice, routing, etc. As soon as the material is received and entered against the requisition record he checks them again for receipt of the material, and certifies to receipt of the material, giving reference to the date and book upon which it is entered, retains the duplicate for his file, and returns the original to the auditor for voucher. The purpose of the first check is an advance notice that the material has been shipped so it will not be necessary to trace for information already possessed.

##### *Freight Bills.*

The freight bills are prepared by the agents at the points where the goods are received, and forwarded by him with the

goods in triplicate, one portion being receipted for by the storekeeper when he receives the goods. These are matched against the receiving records by the dates, waybill and car references, and checked against the copy of the purchasing agent's order to see that the routing is in accordance with same, any notations regarding the freight rates, etc., entered and after being checked regarding extensions, etc., they are attached to the purchase bill, and deductions made from the face of the purchase bill for any freight charges which may have been assumed in accordance with the terms of purchase. The duplicate remains on file with the duplicate purchase bill in the storekeeper's office, and the original is returned with the original purchase bill as voucher for the deduction to the auditor. It is the business of the storekeeper not only to check additions, extensions, etc., but to see that the correct rate is applied as well.

#### *Receiving Freight.*

No freight should be taken from the cars without the waybills. Storekeepers should insist on getting the waybills or freight bills before a piece of material is removed from the cars. This is one of the first precautions that should be taken to prevent mixups and trouble. The waybills being received, they are placed in the hands of a receiving foreman, who arranges them on a clip, and when the cars are set personally supervises the unsealing of the cars, indicating their condition, seal record, etc. He then as closely as possible inspects the exterior appearance of everything that is checked out, checking off the pieces on the waybill, that is—bundles, boxes, or however they may be grouped, and indicates their condition if there is anything apparently wrong with them. He delivers these bundles, packages, etc., to the respective section storekeepers, and, together with the signed waybills, turns them over to the section storekeeper for detailed checking.

The section storekeeper is equipped with what is known as hip pocket freight received book. It is a book about  $8\frac{1}{2} \times 3\frac{1}{2}$ ,  $\frac{3}{4}$  of an inch thick, so it can be conveniently carried in the hip pocket. The idea of this book is that it makes a permanent record, and is big enough so it can be permanently filed. It is the original record of the material as it was received, and is made so as to be carried in the hip pocket so that the man who checks and puts away the freight has both hands free. A loose check is constantly being mislaid, with the result that the receiving books are usually nothing more than abstracts from memorandum slips, and the like, and are not reliable. In this book are first entered: Date, car number, initial, waybill number, details—thus: 1 bundle, 1 box, 1 package.

The boxes, packages, etc., are then unpacked and laid out in the section. If there is a packing list with it, it is compared first with the copy of the order, and then with the material. If there is not it is compared with the order, the identification marks, order number, etc., usually appearing on the box or on the package. If there is a discrepancy, it is called to the attention of the store foreman to witness the inspection and check. He then enumerates the material in detail after having verified it as above, gives its exact condition, if it appears in bad order the apparent causes, and is the man on the ground who actually knows what is received. He has to aid him in this check: First, his stock book; second, copy of the requisition; third, copy of the order; fourth, the check list, if there is one in the package.

The material is then put away in its proper place, and the book is called for daily by the freight received record clerk, where it is entered up in detail against the requisition, from which the purchase bills and freight bills are checked. The men carry two books, one for the odd and one for the even days, so that they always have their freight received book with them, and at the same time the office is not delayed in keeping up their record of freight received. This is always done daily. In receiving freight in storehouses, the most important detail is to have it carefully inspected, checked, marked and put



away, so that it can be located instantly for delivery or shipment. The importance of this will be shown later.

#### *Inspection.*

The inspection of material by storekeepers is a feature which has never been appreciated or understood. It is the most practical and useful inspection there is. A great deal of material is bought in accordance with specifications, and most large railroads have an inspection bureau in charge of an engineer of tests, whose duty it is to see that the material conforms to the specifications. Usually this inspection is made at the mills or factories where the material is made, so as to save the expense of freight to point of delivery. Where it is all subject to inspection at point of receipt, the order so specifies and the storekeeper makes request on the engineer of tests to have the material inspected, receives his certificate and files it with the duplicate purchase bill. When material is inspected at factories or mills, the inspector's certificate is attached to the original purchase bill, and reaches the storekeeper through the regular channel in the same way. This is only one inspection and applies to but a small portion of the material used by a railway.

The other inspection is necessarily made by the storekeeper, and an organization so systematized that there is a specialist in charge of each class of material, a man who knows the actual use to which it is applied, and is in touch with its use every day and with the men who use it on the ground, is the man to inspect this material. Upon him we must depend, not only for the company's getting the weight and quantity it is charged with, but also for its getting an article which is best suited for the purpose for which it is used. He has not only his knowledge of the use of the material, and similar kinds on his shelves, but in many instances he is provided with samples with which to compare, and it is remarkable the things which are discovered every day in a well organized general store on a railway where practical inspection is carried out to its full usefulness.

With our large railways buying enormous quantities of material, practically on the basis of price, the company must protect its purchasing agent by inspection. The buyer is not in position to know what the article is that he is purchasing. He must depend as much on the storekeeper for seeing that he gets what he intends to buy as that he gets the quantity and weight bought, and this work can only be done by the storekeeper.

Thus we have a man who actually orders the material, receives it, inspects it, puts it away on the shelves, and delivers it or puts it up for shipment with his own hands.

#### *Direct Shipments.*

A great deal has been said on this subject. It offers a favorite criticism from those who are not familiar with the details of the supply department. Like many other so-called economics, at first blush it would appear to be more economical to have material shipped directly to the work from the manufacturers, mills, etc., and naturally jobbers and other business houses encourage this among railway officers and purchasing agents. Their claim is that it saves the company carrying the stock, saves handling, back-hauls, etc. All of these claims are more or less fictitious and unsound.

First and most important, it is absolutely impossible to check and inspect material that goes directly, any statement to the contrary notwithstanding. Of course, it may have been inspected at the mill by our inspectors, but in more cases it has not, or it may be changed after it was inspected. So far as the check is concerned, the men that get the material out on the road for the work are interested only in their work, and not in a careful inspection and check of what they get. The chances are they do not check it until weeks afterwards, until they get the bill, and by that time it is used up, or gone somewhere else.

Secondly, there is no necessity for carrying the material in stock just because it is passed through the storehouse. In fact it should not be done. If it is special material, that is, material

that is not ordinarily carried in stock, or more of it than is ordinarily carried in stock, and is ordered only for some particular work, it goes through the storehouse, is inspected, checked and forwarded to its destination. Nine times out of ten, if less than a carload, it can be put in with other material going the same direction and make a carload; or, if it is a carload, it can be rebilled to destination, so that there is no unnecessary car haulage.

So far as saving back-haul is concerned, it is another so-called economy that is greatly exaggerated. There is hardly ever a train that has not empty cars in it.

Of course, it is not intended that this plan should be followed out entirely. It would be ridiculous to do that. Lumber, bridge material, steel bridges, large shipments of all kinds and nature will, of course, be inspected at point of shipment, loaded and shipped directly to the work. I am speaking of the general run of stock or special materials that are used on a railway. Generally speaking, it should all pass through the storehouse, where it can be properly inspected and checked by an organization trained and paid for that work.

#### *Unloading of Cars.*

Probably no more important work falls upon a thorough supply organization than the prompt and economical release of equipment. Car unloading has been shamefully handled on our railways in the past for many reasons:

First—Imperfect and uncertain switching service.

Second—Lack of necessary help to do the work.

Third—Lack of the proper organization to see that it is done.

Switching must be done as promptly and as accurately for the company as for the individual, and the storekeeper must be in position to demand proper switching service.

The system of having laborers in other departments unload cars is wrong and should not be permitted, except at points where there is not sufficient work to keep the necessary number of men busy all the time handling company material. At all other points storekeepers should have sufficient men to promptly unload and release the cars. His organization must be such that he may know the exact time every car is received in the yard, arrange to get the waybills, have the car spotted at its proper place and track, men ready to release the car, and have it promptly reported as an empty, or assigned for reloading.

A daily record of this kind will work wonders in releasing equipment, and will save enormous sums of money by making equipment available when it is needed. There is no excuse for company material remaining under load longer than twenty-four hours, under any well organized supply system.

#### *FILLING REQUISITIONS AND PRICING.*

We have now received our stock and are ready to fill requisitions; or, in other words, we have arrived at the point where we are in shape to carry out the real purpose of the entire organization.

The handling of requisitions has been explained in considerable detail in previous chapters, but for the benefit of the men actually doing this work, it will be proper to more carefully review this important feature.

To start with, we must assume that the organization has been perfected to an extent whereby requisitions will come to the section storekeepers accurately prepared, but if they do not the section storekeepers by means of their organization, that is, their stock books with everything technically described and numbered, are in a position to correct them, and they should do so at once. The requisitions are laid out in each section for filling, and the material packed and plainly marked, giving reference to the requisition number and date, and laid out together with the requisition in the aisles ready for the shipping crews to pick up when the cars are placed for loading. A bulletin is issued each day in the larger stores, showing cars that will be loaded, and where they are spotted. Placards are also put on the cars to prevent mistakes.

The shipping crews pass through the different aisles, the foreman takes the requisitions and checks the material against them, they are loaded into the car in proper station order, the car number entered on the requisition, and the bills delivered to the agent. In the larger stores, the storekeeper is also the agent. At the smaller stores, a shipping notice is prepared and delivered to the agent, from which the billing is prepared.

It is the further duty of the store foreman to see that these cars actually get out of the yard, and report every morning to the storekeeper any cars which are not pulled out. This for the reason that it must be borne in mind that the storekeeper is responsible for seeing that the material is actually delivered where it is wanted, and it serves no good purpose for him to have a receipt for the billing, it is his business to see that it gets there.

The requisition, together with the waybill number and date, and car number, is then delivered to the requisition clerk in the storekeeper's office, who enters the date it was shipped, checks it off, and turns it over to the invoice clerk, who prepares a shipping notice or manifest and invoice at one writing. One copy goes to the consignee, another copy to the maker of the requisition, and the third copy is the invoice, which is afterward priced, extended, and goes to the department having charge of the accounts, usually the division superintendent. The first two copies are identical with the invoice, and made at the same writing, and are, therefore, an invoice in every respect, except price and extension, which cannot be made until later, owing to a good deal of material being made or repaired in the shops, the prices for which are not worked up until the end of the month, or for other reasons.

The purpose of this is to place in the hands of both the maker of the requisition and the consignee a bill for the material before the material arrives. At the larger stores this work is done at night, that is, where there is sufficient to do to keep one man busy it is best to have it done at night so that in all cases these advices will be in the hands of the men who receive the material before the material can get there.

The original requisition is then filed numerically by divisions, and shows, on its face, car number and date of shipment, waybill number and date, invoice number and date, and forms the original record, from which all information is given. Anyone inquiring about this requisition only has to give the number, when every detail regarding its handling is apparent on its face.

Any back orders, that is, items which are not on hand, or were not ready for shipment at that time, are abstracted therefrom, and will, when filled, pass through the same channel and be attached to the original, so that there are two places the requisition may be found, either on file in the storekeeper's office, arranged numerically under its proper division, or in the section storekeeper's station in its proper division.

The most important feature to bear in mind in the handling of requisitions is promptness. This cannot be too earnestly impressed on all concerned. The great fault of our storekeepers is the useless routine and delay in handling their requisitions.

#### Pricing.

There is no more important work than pricing, and it is something which has never been given the attention it should have been. Prices must, of course, be accurate, but they must also be in shape so they can be gotten at. There is more guessing done on account of prices being hard to obtain than for any other one reason. Another cause of erroneous pricing, and often ridiculous pricing, is that the price clerk is not able to identify the description on the requisition with the description in his price book, and the system which has been outlined has had this point always in view. For this reason the stock books are all written up at one time, which insures the same description appearing at every point on the system. Requisitions and shop tickets are checked against the stock books and the proper descriptions inscribed thereon. Requisitions for material are made up from the stock books, so that the same description

appears on the requisitions. The purchase bills are checked against the requisitions, and the descriptions on the purchase bills changed to agree with the descriptions on the requisitions, so that the duplicate purchase bill in the storekeeper's office, from which the prices are taken, bears exactly the same description as that on the requisition and shop tickets. Besides the price books are revised every year in the same way as the stock books, further insuring the same descriptions appearing in every transaction. Therefore, when the price clerk gets his requisitions and shop tickets, he has the correct description before him, and can identify it instantly with its correct price.

The most satisfactory price book is loose leaf, plain book without any printing on it. It is ruled up in such a way that it will show only the year and the requisition number, thus:

1909.

444.

Item 1—Adzes, R. R., 5 inches wide .....doz. \$5.50

meaning that this price obtained for requisition 444. The reason for putting in the year is that we change the numbers of our requisitions yearly, commencing with 1, and the reason for putting in the number of the requisition is that by turning to this requisition you can locate the entire transaction, e. g.,

Number and date of requisition,  
Description of material ordered,  
Date it was received,  
How it was received,  
From whom it was received,  
Point of delivery,  
Actual cost, including freight,

and this entry can be made, in the smallest possible space, with the least number of marks of the pen. Giving the consignee's name and address, and all that sort of thing, only makes your price book bulky and destroys its usefulness.

The reason why I prefer loose leaf price books to cards is that they are more permanent, and not so likely to get mislaid and lost as cards, and for the further reason that six or seven price books can be written up at the same time with carbons on the typewriter on good bond paper, thus insuring the same description in each one, and the location of the item in the same place.

Store orders are handled in exactly the same way. The prices are simply taken from the store orders, and reference given to the store order number, indicated by "S. O."

The same persons should do all the pricing. They should make a business of doing pricing and nothing else. In this way they become accurate and quick. No set rules regarding changing of prices can be carried out, good judgment simply must be used. The most satisfactory plan, I believe is to have yearly prices, that is, to make up the prices once a year and maintain these prices during the year with certain exceptions, the loss or profit owing to fluctuation in prices being applied to the proper accounts at the end of the year by the auditor. In this way every division is treated the same, with result that the operating expenses are not influenced in any way by different prices on different divisions or districts. After all figures are only of use for comparative purposes.

This, of course, simplifies the price book very much, it only being necessary to write up the price book once a year, as explained above, the prices remaining the same for everything on hand at that time during the year.

The next installment will take up assembling, marking, loading, manufacturing, repair work, shop deliveries and accounting.

(To be continued.)

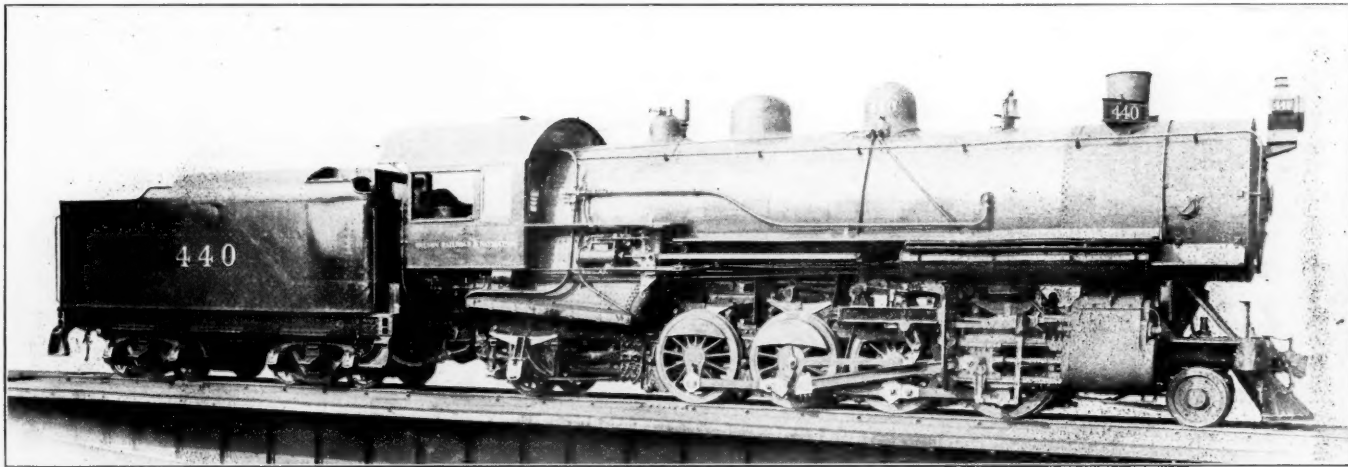
The minister of public works of Argentina has approved the plans, specifications, and description presented by the Santa Fe Railway Company for the construction of a branch line starting at Reconquista and extending northward for a distance of 25 miles.



# MIKADO LOCOMOTIVE FOR BURNING LIGNITE; OREGON RAILROAD & NAVIGATION COMPANY.

The railways in the Northwest, near Puget Sound and Portland, Ore., are at such a distance from a good coal supply that some of them are arranging to use oil from Bakersfield, Cal., a distance of 1,086 miles from Portland. The Oregon Railroad & Navigation Company (now the Oregon-Washington Railroad & Navigation Company) has used oil on some locomotives but it now uses Cumberland coal from Kemmerer, Wyo., 40 miles west of Granger, Wyo., and 904 miles from Portland. There are lignite mines at Centralia, Wash., on the line of the Oregon-Washington, 96 miles north of Portland. To test this lignite in locomotive service the Oregon Railroad & Navigation Company had the simple Mikado type locomotive, which is here illustrated, built by the Baldwin Locomotive Works. It was especially designed for burning lignite coal. The cylinders are 23¾ in. x 30 in., the driving wheels 57 in., and the weight on drivers is 204,450 lbs. The principal features of the locomotive which are intended to adapt it for the use of lignite fuel are the large boiler, the large firebox, a brick arch supported on tubes, and a long smokebox extending 66 in. in front of the exhaust nozzle, with a total length of 100 in. The boiler is 82 in. in diameter, with 495 two-inch tubes 20 ft. 6 in. long, providing a tube heating

<i>Cylinders.</i>	
Kind .....	Simple
Diameter .....	23¾ in.
Stroke .....	30 in.
<i>Valves.</i>	
Kind .....	Bal.-Piston
<i>Wheels.</i>	
Driving, diameter over tire.....	57 in.
Driving journals, main, diameter and length.....	10½ in. x 12 in.
Driving journals, others, diameter and length.....	9 in. x 12 in.
Engine truck, diameter.....	30½ in.
Engine truck, journals.....	6 in. x 10 in.
Trailing truck, diameter.....	36 in.
Trailing truck, journals.....	8 in. x 14 in.
<i>Boiler.</i>	
Style .....	Straight
Working pressure .....	180 lbs.
Outside diameter of first ring.....	82 in.
Firebox, width and length.....	84 in. x 120 in.
Firebox, tube sheet, thickness.....	½ in.
Firebox water space.....	5 in.
Tubes, number and diameter.....	495—2 in.
Tubes, length .....	20 ft. 6 in.
Heating surface, tubes and firebox.....	5,527 sq. ft.
Heating surface, firebox.....	235 sq. ft.
Heating surface, firebrick tubes.....	32 sq. ft.
Heating surface, total.....	5,559 sq. ft.
Grate area .....	70 sq. ft.
<i>Tender.</i>	
Tank, style .....	Water bottom
Journals .....	6 in. x 11 in.
Water capacity .....	9,000 gals.
Coal capacity .....	10 tons



Mikado Lignite Burning Locomotive; Oregon Railroad & Navigation Company.

surface of 5,292 sq. ft., the firebox is 7 ft. wide and 10 ft. long, giving a grate area of 70 sq. ft. The draft rigging and spark arrester are shown in the detail drawing. A large area of netting, 7 x 7 mesh, No. 17 wire, is provided, which is fixed horizontally on the center line of the smokebox and is more than 7 ft. square, the exact size being 85 in. x 85 in. There is also a netting basket down to the exhaust nozzle, a vertical netting at the upper part of the front half of the smokebox, and a baffle plate of the usual design and proportions. The principal dimensions and data of the locomotive are given on the accompanying table:

<i>General Data.</i>	
Type .....	2-8-2
Service .....	Freight
Fuel .....	Lignite
Tractive effort .....	45,500 lbs.
Weight in working order.....	263,100 lbs.
Weight on drivers.....	204,450 lbs.
Weight of engine and tender in working order.....	425,000 lbs.
Wheel base, driving .....	16 ft.
Wheel base, total .....	34 ft. 8 in.
Wheel base, engine and tender.....	64 ft. 7 in.
<i>Ratios.</i>	
Total weight ÷ tractive effort.....	5.78
Weight on drivers ÷ tractive effort.....	4.50
Tractive effort × diameter drivers ÷ heating surface...	466.00
Total heating surface ÷ grate area.....	79.50
Firebox heating surface ÷ total heating surface, per cent.	4.23
Weight on drivers ÷ total heating surface.....	36.80
Total weight ÷ total heating surface.....	47.30
Volume both cylinders, cu. ft.....	15.40
Total heating surface ÷ vol. cylinders.....	361.00
Grate area ÷ vol. cylinders.....	4.55

The freight locomotives used on the Oregon Railroad & Navigation Company are the standard consolidation type of the Harriman Lines, and their principal dimensions are: Cylinders 22 in. x 30 in.; drivers 57 in.; boiler 80 in. diameter; tubes 15 ft. long; tube heating surface 3,236 sq. ft.; firebox 66 in. x 108 in.; grate area 49.5 sq. ft.; and weight on drivers 187,000 lbs. The advantage of the Mikado type over the consolidation is that the large firebox is entirely back of the drivers and has a depth in front of 87¼ in. as compared with 74 in.; the tubes are 20 ft. 6 in. long as compared with 15 ft.; the smokebox is 100 in. long as compared with 74 in. The Mikado also has a fire-brick arch which is not provided in the consolidation engine.

## SERVICE TESTS OF LIGNITE AND CUMBERLAND COALS.

From September 25 to October 7, 1910, tests were made by the Oregon Railroad & Navigation Company with the Mikado engine No. 440 burning Hannaford creek lignite from Centralia, Wash., and with the consolidation engine No. 379 burning Cumberland coal from Kemmerer, Wyo. The Cumberland coal has a heat value of about 10,000 B. T. U. per lb., and the lignite 8,900 B. T. U. per lb. The tests were made under the direction of F. W. Mahl, assistant to the director of maintenance and operation of the Union Pacific and Southern Pacific systems. The line selected for the test was that running east from Portland between Albina, Ore., and the Dalles, 88 miles in length. It is comparatively level with a few grades 26 ft. to the mile and a maximum of 53





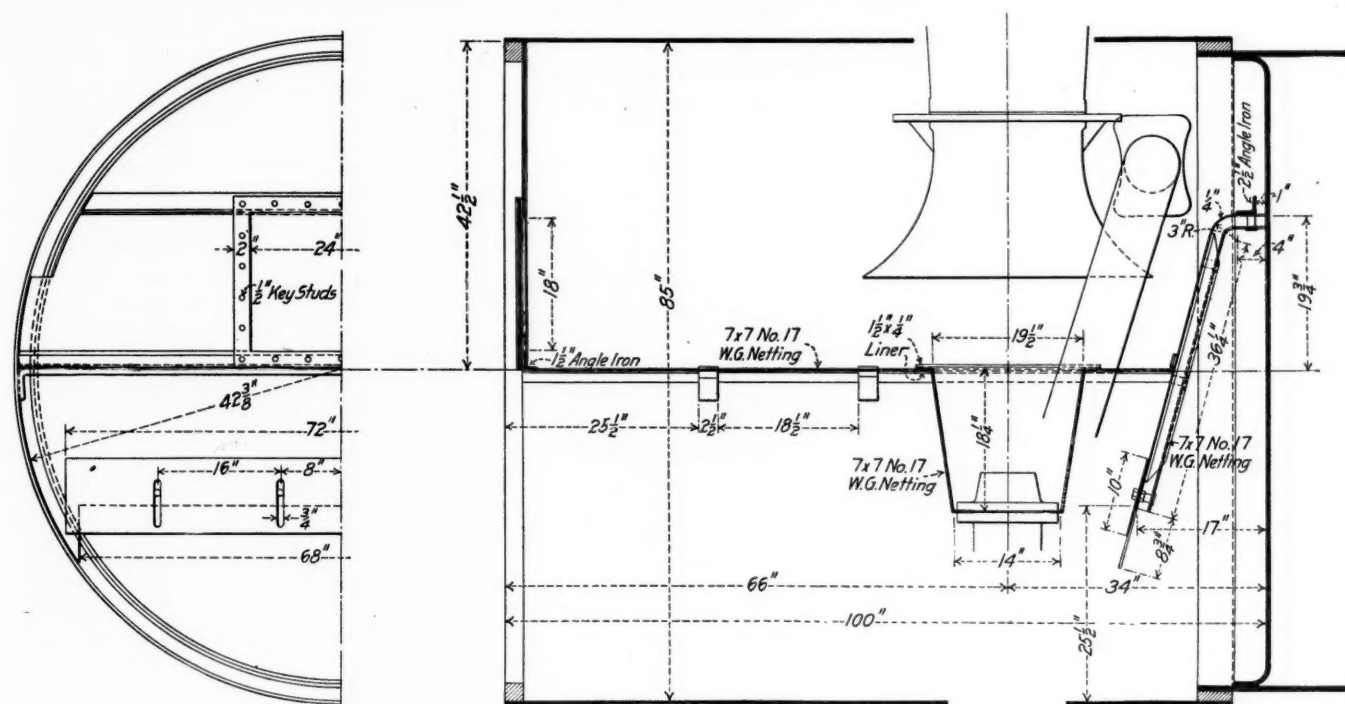
ft. to the mile  $4\frac{1}{2}$  miles east of East Portland, where a pusher engine was used with all test trains.

The figures shown are the average of three round trips with each locomotive under ordinary service and operating conditions, the coal and water having been carefully weighed and measured. A number of special observations were made to determine the amount of live sparks discharged from the stack. The consolidation engine burning Cumberland coal threw more live sparks than the Mikado. They were larger and not entirely consumed on reaching the ground, while those from the lignite coal were quickly burned out. In addition to its demonstration of the possibility of burning lignite on large locomotives without danger of fire risk, the tests show that the cost of lignite for a given service is about 17 per cent. less than for Cumberland coal. The cost of fuel per 1,000 ton-miles is 28.137 cents for the consolidation engine and 23.305 cents for the Mikado. These figures do not include the cost of hauling the fuel, which if taken into account, would be of further advantage to the lignite, as it requires a haul of only 96 miles to Portland, while the Cumber-

### BLOCK SIGNAL AND TRAIN CONTROL BOARD.

The principal features of the third annual report of the Block Signal and Train Control Board of the Interstate Commerce Commission, were noticed in the *Railway Age Gazette* of January 20, page 117. Below we give that part of the report dealing with automatic air-brake hose connections and additional information concerning automatic train stops.

**Connectors.**—Two automatic hose connectors have been held to possess merit. Automatic hose connectors are now used regularly, but only to a limited extent, and their use still seems to be regarded as experimental. One of the main reasons for failure of the railroads to adopt hose connectors, so far as the board can determine, seems to be the failure of manufacturers and designers of connectors to agree upon the specific form of connector contour that will fulfill the requirements of the situation. As was indicated by Mr. Willis C. Squire, in a comprehensive paper on the subject of automatic connectors for freight and passenger train cars, which was read before the Western



### Smokebox Arrangement of Mikado Locomotive for Burning Lignite.

land coal is mined at a distance of 904 miles from that place. The results of the tests are given in detail in the table below:

Number of locomotive .....	440	379
Type of locomotive .....	<i>Mikado</i>	<i>Consolidation</i>
Total time on road between terminals.....	15 h. 32 m.	16 h. 59 m.
Time lost standing .....	4 h. 46 m.	5 h. 29 m.
Actual running time .....	10 h. 46 m.	11 h. 30 m.
Average running speed, deducting stops, m. p. h. ....	16.4	15.3
Number of stops made .....	19.33	16.66
Pounds of water evaporated .....	294,808	282,270
Pounds of coal burned on road.....	62,427	53,067
Apparent evaporation, pounds of water per pound of coal .....	4.73	5.32
Evaporation from and at 212 deg., pounds of water per pound of coal.....	5.77	6.48
Distance run—miles .....	176.6	176.6
Number of loaded cars in train.....	87.66	87.
Number of empty cars in train.....	6.	2.33
Total number of cars in train.....	93.66	89.33
Weight of train in tons.....	4,444	4,013
Ton-mileage .....	392,405	354,857
Pounds of coal per 1,000 ton miles.....	159.08	149.665
Cost of coal per 1,000 ton miles in cents.....	23.305	28.137

The Mikado locomotive gave such satisfaction that future new freight equipment will be made similar to it.

A consular report says that immigration into Paraguay is small, but growing confidence, together with the opening up of a fine section of the country adjacent to Argentina, by railway communication, affords an encouraging outlook.

Railway Club on September 20, 1910, the conditions of operation that have to be met in the use of an automatic connector can best be obtained by a combination of the most practicable features and methods of support, contact, and registration now embodied in several of the types of connectors that have been in service for some time past. Mr. Squire states as his opinion that—

"This combination is possible, is desirable, and will be accomplished when the connector manufacturers finally get together to decide upon standard form and features for manufacturing automatic connectors for freight train and passenger train service. When this condition of affairs is an accomplished fact, refinements of designs and elimination of unnecessary parts and the simplification of the entire mechanical problem will be possible."

In response to a request from the board, the Long Island Railroad Company has furnished the following information:

"As far as this company is concerned, the history of automatic hose connectors is as follows: In November, 1902, 4 engines and 20 cars were equipped experimentally with the Westinghouse automatic air and steam couplers. These were of the side-port type, the couplers being held together by long bent springs at the side.

"In the fall of 1903 all passenger locomotives and passenger cars were equipped with this automatic coupler. From the beginning a great deal of difficulty was experienced in keeping the couplers tight. It was found very hard to locate the hose terminals properly and to get a length of hose which, if moved in one direction, would not kink or would not be pulled in two when moved in the opposite direction. The spring arms holding the coupler heads were found very difficult to keep at the proper tension, and screw jacks were provided to set these springs down occasionally. It was found that the gaskets became displaced and had to be replaced with considerable frequency. This is a very annoying feature, because, when trains were found in the train sheds with the gaskets leaking, they had to be cut in two to replace the same on account of the construction of the coupler.

"It was desired to increase the train-line pressure from 70 to 110 pounds on our passenger trains about 1908, on account of the introduction of the high-speed brake. It was found utterly impossible to do this with the original style of automatic connector, as the springs would not hold the pressure. The Westinghouse Automatic Air and Steam Coupler Company then re-designed their connector so as to permit the use of a coil spring which was adjustable, so that a constant tension could be maintained. Therefore, in May, 1909, a complete new outfit of automatic connectors was purchased and installed on all of our passenger equipment. This resulted in greatly decreasing the trouble from leakage, but it was then developed that the automatic connectors damaged the hose somewhat when cars curved and a large increase was found in the number of burst hoses.

"At the present time the latest type of automatic heads are running on our passenger-train cars and locomotives with reasonable success. We find, however, that the leakage is much greater than with hand couplers and are of the opinion that there is no saving whatever in the cost of the hose. We are also doubtful as to whether the time saved by automatic connectors justifies their expense in view of the fact that serious delays occur whenever it is necessary to change a gasket after a train is made up.

"We consider the use of these connectors still in the experimental stage and are not fully prepared to recommend them for general use."

The Chicago & Alton advises the board that two of its trains were equipped with automatic connectors some years ago, but that considerable trouble has been experienced on account of leakage, and the company is not contemplating any additional equipment.

The mechanical officers of the New York Central lines report that they have tested a number of different designs of connectors, but that as yet none has been found that will operate successfully under heavy traffic conditions.

#### AUTOMATIC STOPS—PLANS PRESENTED.

(1) Charles E. Duffie, Omaha, Nebr. Approved for test February 22, 1908. This is a cab signal and train stop making use of intermittent contact rails. It will be tried on the Union Pacific about 40 miles west of Omaha on the main line.

(2) A. L. Bower, Boyertown, Pa. Approved for test July 20, 1908. This is a cab signal and automatic train stop, requiring short sections of insulated track rails and the insulation either of a truck from the remainder of the locomotive or of the locomotive from the tender. The installation has not been completed, and the board is not aware of any present activity on the part of the inventor looking toward that end.

(3) G. W. Jayne, Washington, D. C. Plans tentatively approved July 20, 1908. A cab signal and train stop making use of Hertzian waves, a "wireless" system; also another system working by induction.

(4) Perry-Prentice Electric Company, Chicago, Ill. Approved for test July 20, 1908. This is a Hertzian wave or wireless cab signal and automatic stop system. It has been installed on the

Chicago Suburban Railroad (electric) and examined by the board. This installation was not considered suitable for a conclusive test. The board has been advised, under date of November 8, 1910, by the Perry-Prentice Company that lack of capital alone has prevented making an installation for test.\*

(5) P. J. Simmen, Los Angeles, Cal. Approved for test July 29, 1908. This is a controlled manual block and automatic train stop system employing intermittent contact rails. This system, without automatic stop, was installed and used on the Toronto & York Radial (electric) Railway, and was inspected by members of the board. No installation has as yet been offered in which the automatic stop was used, and the installation on the Toronto & York Radial Railway does not approximate service conditions on steam roads closely enough to warrant the board in conducting a test of that installation. Mr. Simmen advises, in reply to a recent inquiry, that lack of capital has prevented him from providing such an installation as the board would consider satisfactory for test purposes. He estimates that an installation suitable for test by the board would cost from \$15,000 to \$25,000, because in order to demonstrate the remote control principle which is a prominent feature of his system it would be necessary to equip an entire division of some road. He advises the board that he has been in negotiation with the Pennsylvania Railroad Company for permission to make an installation on its Bedford division about 70 miles in length. These negotiations have not yet been successful for the reason, as Mr. Simmen states, that he and the officers of the road have not been able to come to a satisfactory conclusion on the matter of terms covering the cost, which it is stated will be about \$12,600 at a minimum.

(6) Railway Electric Signal Company, New York, N. Y. Approved for test July 29, 1908. This is an automatic stop and cab signal of the intermittent contact rail type employing alternating current.

(7) H. D. Patterson, New York, N. Y. Approved for test October 1, 1908. This is a cab signal and train stop system in which electrical devices located along the roadway act inductively to produce effects upon apparatus located on the train or engine. In reply to an inquiry, Mr. Patterson states that he is now preparing for an installation suitable for examination by the board on one of the elevated lines of New York City. He also states that lack of capital has delayed the work of development.

(8) Rowell-Potter Safety Stop Company, Chicago, Ill. Approved for test October 12, 1908. This is a ground mechanical trip automatic train stop and automatic block system combined. It was tested by the board during the winter and spring of 1908-9, and reported on in the second annual report. The board has no information of any working installation of this system having been made.

(9) H. J. Warthen, Washington, D. C. Approved for test November 2, 1908. This is an intermittent contact rail cab signal and automatic train stop. The device is now being installed on the Buffalo, Rochester & Pittsburg, near Rochester, N. Y., for purposes of test.

(10) A. H. Fox, New York, N. Y. Plans tentatively approved May 27, 1909. This is an automatic train stop of the magnetic or inductive type, depending for its operation on the nonmagnetic property of manganese steel rails. The inventor was encouraged to develop his system further, and now informs the board that he has secured the use of tracks on the Putnam division of the New York Central, and proposes to make an installation for the purpose of testing the operation of his device with a view to securing definite data regarding particular features; and that as soon as these data have been obtained he will be prepared to offer the board an installation for test purposes.

(11) Gray-Thurber Automatic Train Control & Signal Company, Pittsburg, Pa. Approved for test October 21, 1909. This is a cab signal and train stop requiring short sections of insulated track rails, and the insulation either of a truck from the

\* This was tried on the Canadian Pacific, Dec. 8, as reported in the *Railway Age Gazette*, Dec. 16, page 1158.



remainder of the locomotive or of the locomotive from the tender. This device is now being installed on the Lake Shore & Michigan Southern, near Cleveland, for purposes of test.

(12) S. H. Harrington, New York, N. Y. Approved for test September 15, 1909. This is an overhead mechanical trip automatic train stop. It was tested by the board on the Erie Railroad during the winter of 1909-10. (See Appendix D for results of test.)

(13) Darwin G. Jones, Atlanta, Ga. Approved for test December 22, 1909. This is an intermittent contact rail cab signal and automatic train stop.

(14) Electrical Automatic Railroad Safety Signal Company, New York, N. Y. Approved for test May 28, 1910. This is called the Lacroix cab signal and automatic stop; it is an intermittent contact rail system. This device was installed and exhibited on the Erie Railroad, near Nutley, N. J., and has been examined by a member of the board. Plans of an installation which is now being made on the Staten Island Rapid Transit Railway have been filed with the board, and it is expected that this installation will be ready for official test during the coming winter.

(15) Ross Engineering Company, Chicago, Ill. Approved for test July 22, 1910. This is a cab signal and automatic stop, requiring short sections of insulated track rails at indication points, and the insulation of one truck from the remainder of the engine or of the locomotive from the tender. The board is not aware of any action yet taken looking toward an installation for test purposes, but is informed by the proprietors that the General Railway Signal Company, of Rochester, N. Y., is developing the Ross apparatus and intends to make an installation to test the merits of the system.

(16) Railway Automatic Safety Appliance Company, Wilmington, Del. Approved for test September 21, 1910. This is a mechanical trip automatic train stop in which the trips are of intermediate height, or about the level of the buffer beam on the locomotive pilot. The board is informed by the proprietors of this device that arrangements have been made with the Pere Marquette to make an installation for official test purposes and that work upon this installation is now in progress; it is expected to be completed, ready for inspection, about the middle of December.

In addition to these purely automatic stop devices, the board has approved for test the following cab signal devices, to which an automatic train stop can be attached, if desired:

(17) E. F. Clement, Philadelphia, Pa. Approved for test February 22, 1908. This is a cab signal system designed to repeat in the engine cab the indications of fixed signals along the roadway, making use of short sections of insulated track rails and a truck insulated from the remainder of the locomotive, or the locomotive insulated from the tender.

(18) Railway Audible Signal Company (Limited), London, England. Approved for test February 5, 1910. This is an audible cab signal requiring short sections of contact rail. The apparatus is electrically operated in connection with fixed signals. In operation, when the signals are clear, the contact rail is charged, causing a proceed indication to be displayed in the cab; when the signals are at stop, the circuit to the contact rail is broken, causing an audible danger indication to be given in the cab. The apparatus is in use on the Great Western Railway of England, and records of its service were given in the board's last annual report, page 22. The company states that it is now negotiating for an installation in this country for purposes of test.

Only two devices have been tested by the Board, the Rowell-Potter and the Harrington. Concerning the Rowell-Potter the board said:

As regards the system as a whole, the board concludes that if the faults mentioned (in the report) were remedied, and it sees no reason why they should not be substantially overcome, and if the apparatus were well inspected and maintained, the system would be safe and reliable, and its use would tend materially to promote safety of operation on a railroad using it.

As to its economy, there is insufficient data to form a conclusion of any real value.

Concerning the Harrington the board said:

The system, with reasonable inspection and maintenance, would be safe and reliable and its use would tend materially to promote safety of operation on a railroad using it.

#### PENNSYLVANIA STATE RAILROAD COMMISSION.

The Pennsylvania State Railroad Commission in its annual report to the governor, tells of its activities during the past year under the following heads: Pittsburgh Trolley Situation; Locomotive Boiler Inspection; Philadelphia Trolley Situation; Improved Service on the Philadelphia & Reading; Investigation of Telephone Rates; Accidents; Recommendations. For the inspection of boilers the commission has adopted rules similar to those of New York, recently noticed in the *Railway Age Gazette* (January 20, page 120). The Philadelphia trolley situation is being investigated by Ford, Bacon & Davis, a work which has been going on for several months. A report is expected soon. The passenger service of the Reading was investigated by order of the Senate, and considerable improvement has been accomplished. The commission renews its recommendation for a law to prevent trespassing, the legislature having neglected the recommendations heretofore presented on that subject.

The act creating the commission does not specifically designate what shall be the force and effect of a recommendation by the commission, and it is recommended that this weakness of the law be corrected. The decisions of the commission ought at least to be treated at prima facie sound when brought before a court or other tribunal. All of the recommendations hitherto made by the commission have been complied with except in two cases; one where the Baltimore & Ohio was ordered to change its local passenger fares, and the other where all lines were required to check baggage through for passengers holding adequate transportation, even if in two or more separate tickets. The Pennsylvania refused to comply with this last recommendation. The Baltimore & Ohio, to meet the competition of the Pittsburgh & Lake Erie, charges between Pittsburgh and Connelville, 2 cents a mile; but from stations in this territory to other points on its road it charges 3 cents a mile. This discrimination the commission desired to have corrected.

The commission is having made two new maps of the state; one primarily to show the railways, and the other the trolley lines.

#### FOREIGN RAILWAY NOTES.

The definite surveys and estimates for the proposed extensions of the Baturite Railway, Brazil, and of the Victoria-Diamantina Railway have recently been approved. The extension of the Baturite Railway will be a little over 18 miles long, from Iguatu to Cedro, while the Victoria-Diamantina will extend 161 miles over the section between Itabira and Matto Dentro and the line to Santa Anna dos Ferros.

A contract has been let for the connection of the West of Minas Railway in Brazil with the Goyaz Railway. Specifications provide for payment on unit basis. Name of contractor may be had on inquiry from the Bureau of Manufactures, Washington, D. C. Plans have been approved to extend the Goyaz Railway 159 miles, from Ipamery to Antas, and another extension from Perdicao to Palestina, to cost \$2,100,000.

The Chilean government has outlined extensive public improvements for 1911, covering railway building, harbor improvements, waterworks, sewer systems, etc. The estimates for new work on the 35 railways under construction by the government amount to \$10,194,450 United States gold for the year, with \$1,080,578 for surveys for new lines, condemning right of way, etc., and \$365,000 for new rolling stock to be used on the new lines under construction, to say nothing of the new equipment needed for the old lines.

TRAIN ACCIDENTS IN DECEMBER.<sup>1</sup>

Following is a list of the most notable train accidents that occurred on the railways of the United States in the month of December, 1910. This record is intended to include usually only those accidents which result in fatal injury to a passenger or an employee or which are of special interest to operating officers. It is based on accounts published in local daily newspapers, except in the case of accidents of such magnitude that it seems proper to write to the railway manager for details or for confirmation.

## Collisions.

Date.	Road.	Place.	Kind of		Kil'd.	Inj'd.
			Accident.	Train.		
2.	Toledo & O. C.	Glouster.	rc.	F. & P.	0	5
5.	A., T. & S. F.	Victorville.	bc.	P. & F.	0	3
6.	N. Y. C.	Ogdensburg.	xc.	P. & F.	0	2
13.	Bessemer & L. E.	Rockdale.	rc.	F. & F.	1	2
*21.	Penn.	Chicago.	xc.	P. & F.	1	10
22.	N. Y., N. H.	N. Gro'dale.	rc.	F. & F.	2	1
*22.	Penn.	Millstone J.	rc.	F. & F.	..	..
(See derailments.)						
†24.	Penn.	Nevada, O.	xc.	P. & P.	6	6
25.	Boston & M.	Somerville.	xc.	P. & F.	1	0
27.	Chic. & Alton	Farber, Mo.	rc.	P. & F.	3	0
27.	Balt. & Ohio	Mercer's, W. Va.	bc.	F. & F.	4	2
27.	Chic. G. W.	Stockton.	bc.	F. & F.	3	0

## Derailments.

Date.	Road.	Place.	Cause of derlmt.	Kind of train.	Kil'd.	Inj'd.
2.	Missouri Pac.	Knobnoster.	b. rail.	P.	0	15
3.	Carolina, C. & O.	Clinchport.	acc. obst.	F.	3	3
4.	St. Louis & S. F.	Brookf'd Junc.	ms.	P.	0	5
5.	N. Y., N. H. & H.	Hilliard.	unx.	F.	0	2
9.	Norfolk & W.	Batavia.	exc. speed.	F.	0	2
14.	A., T. & S. F.	Davis, Okl.	b. rail.	P.	1	31
22.	Penn.	Millstone J.	acc. obst.	P.	3	4
24.	Norfolk & Western	Crum, W. Va.	unx.	P.	4	15
27.	N. Y. C.	Weehawken.	d. switch.	F.	1	1
29.	Louisv. & N.	Ben Hur.	unx.	F.	2	0
30.	San Antonio & A. P.	Pettus.	d. switch.	P.	1	6
31.	Texas & Pac.	Mesquite.	b. rail.	P.	0	10

In the collision at Millstone Junction, N. J., about two o'clock on the morning of December 22, three trains were involved. A westbound freight which was at a standstill, waiting for a clear signal into the next block section, was run into at the rear by a following freight, which had been run past one caution and one stop signal. In this collision the flagman of the standing train, who was in the caboose, was killed. A part of the wreck fell across the adjacent main track and was run into by a westbound passenger train which came along about one minute after the collision. The passenger engine was derailed. By the double wreck all four main tracks were blocked for about four hours, and one engineman, one fireman and one flagman were killed.

The collision at Nevada, Ohio, on the 24th, was between eastbound passenger train 48 and westbound passenger train 15. The latter was running on the eastbound track, and when it was struck was within a short distance of the point at which it was to cross back to the westbound track. Two passengers, two baggagemen, the engineman of the eastbound train and a man riding with him to learn the road, were killed. Six passengers and four employees were injured. The eastbound train ran past a caution signal two miles west of the crossover, a red signal one mile distant and two red signals at the tower; and collided with the westbound train 2,000 ft. east of the tower.

The collision at Mercers, W. Va., on the 27th is reported to have been due to a mistake in handling despatcher's orders.

The derailment near Crum, W. Va., on the 24th, occurred at the west end of Tunnel No. 6. Four mail clerks were killed, and eight passengers, two clerks, two express messengers, one news agent and two employees were slightly injured. The cause of the derailment is not known, as the track was badly torn up, but it is thought that something derailed the engine. The mail

car struck the west portal of the tunnel, after it had been derailed and was badly damaged, as was also the express car next to it.

An otherwise unimportant derailment in the yard of the Grand Central Terminal of the New York Central in New York City on the 19th ruptured one of the pipes used for supplying cars with Pintsch gas, and the escaping gas, some 20 or 30 minutes after the derailment, having accumulated in an open space beneath a large building—the sub-station of the power system—and becoming ignited, exploded, destroying the building and killing 13 persons.

Of the half dozen electric car accidents reported in the newspapers as occurring in the United States in the month of December, two, one on the 7th and one on the 24th, both occurring in Cincinnati, were reported as being attended with fatal results. On the 7th a car was struck by a train of the Baltimore & Ohio at a crossing and the motorman was fatally injured; and on the 24th a rear collision of street cars resulted in the fatal injury of two persons.

In a butting collision on the Grand Trunk near St. Hyacinthe, P. Q., December 10, between a light engine and a freight, four trainmen were killed. The road at this point is double track, and according to the reports, the collision was caused by the light engine running on the wrong track.

## DOUBLE TRACK RAILWAYS IN MINNESOTA.

The railway map of Minnesota, given herewith, is printed for the purpose of showing all sections of railways in the state on which there are two or more main tracks. All of the railways which are shown in heavy lines on the diagram are double-track railways, except the one small piece of three-track lines, as noted.

There are in this state two prominent examples of situations where two companies, each owning a single-track line, have put the lines together, under a single superintendent, to be operated as a double-track railway, namely, the Northern Pacific and the Great Northern, from a point near Minneapolis to East St. Cloud, about 60 miles, and the lines of the Chicago, Milwaukee & St. Paul and the Chicago, Burlington & Quincy for 20 miles south of St. Paul.

The termini of the double-track sections are given in the table below:

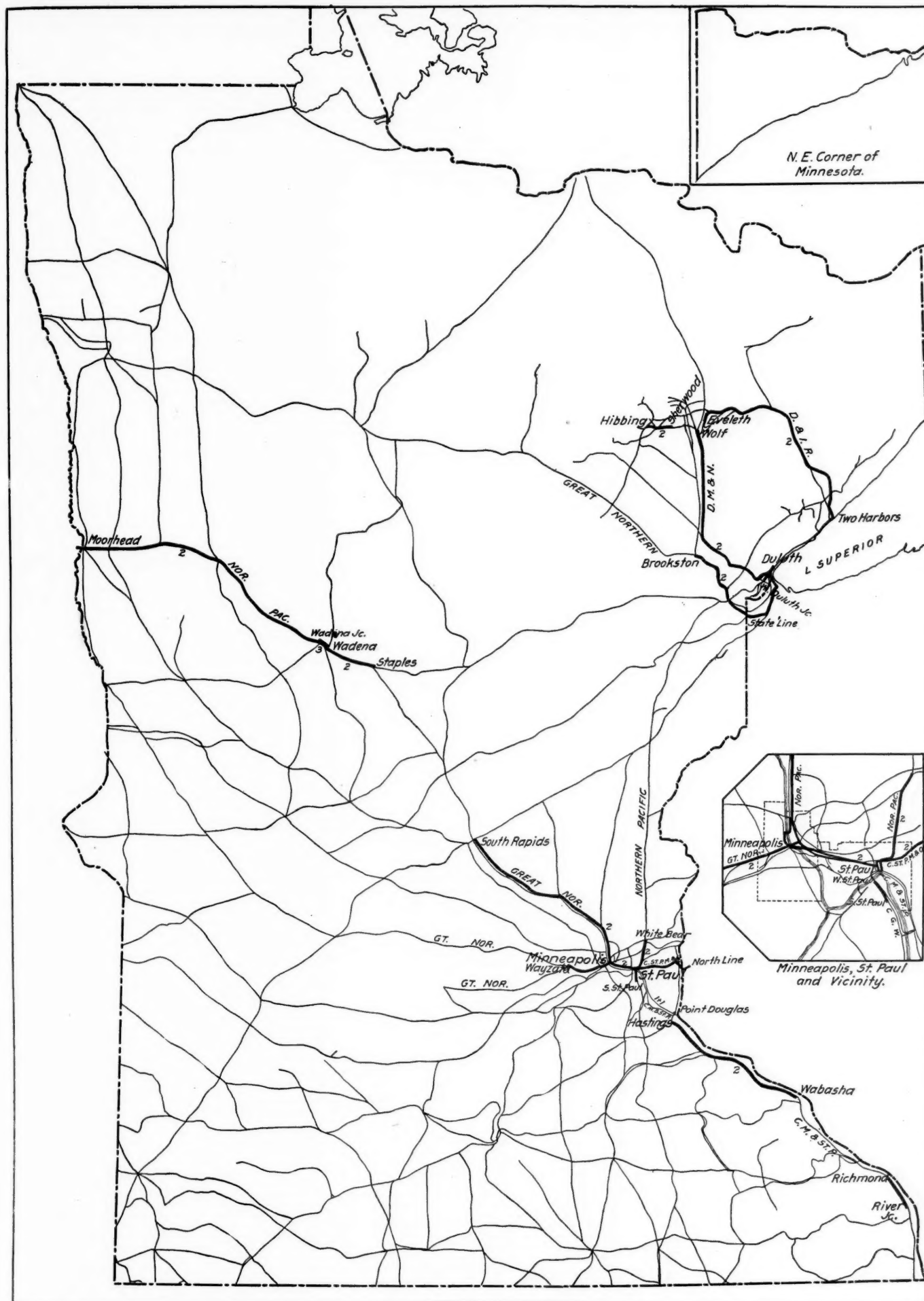
MINNESOTA.			
Chicago, Burlington & Quincy.			
	No. Tracks.	No. Miles.	
Point Douglas-St. Paul (with C., M. & St. P.)	2	20	
Chicago Great Western.			
W. St. Paul-S. St. Paul	2	4	
Chicago, Milwaukee & St. Paul.			
River Jct.-Richmond	2	10	
Wabasha-Hastings	2	50	
St. Paul-Minneapolis	2	10	
C., St. P., M. & O.			
St. Paul-Northline, Wis.	2	23	
Northern Pacific.			
St. Paul-Minneapolis	2	10	
St. Paul-White Bear	2	11	
W. Duluth Jct.-Duluth	2	6	
In Duluth	2	1	
In St. Paul	2	2	
In Minneapolis	2	9	
Staples-Moorhead (including 1.6 miles three-track)	2	107	
Great Northern.			
State Line-Brookston	2	33	
St. Paul-Sauk Rapids	2	77	
Minneapolis-Wayzata	2	14	
Duluth & Iron Range.			
Two Harbors-Eveleth	2	73	
Duluth, Missabe & Northern.			
Duluth-Wolf	2	68	
Sherwood-Hibbing	2	10	

\* Two single track railways operated as one double-track. In some places the two tracks are a mile or more apart.

<sup>1</sup> Abbreviations and marks used in Accident List:

rc. Rear collision—bc. Butting collision—xc. Other collisions—b. Broken—d. Defective—unf. Unforeseen obstruction—unx. Unexplained—derail. Open derailing switch—ms. Misplaced switch—acc. obst. Accidental obstruction—malice. Malicious obstruction of track, etc.—boiler. Explosion of locomotive on road—fire. Cars burned while running—P. or Pass. Passenger train—F. or Ft. Freight train (including empty engines, work trains, etc.)—Asterisk. Wreck wholly or partly destroyed by fire—Dagger. One or more passengers killed.





Double Track Railways In Minnesota.

## General News Section.

The Boston, Cape Cod & New York Canal Co. has made a mortgage to secure \$6,000,000 50-year 5 per cent. notes, under which \$1,420,000 bonds are to be issued at once.

The Hartford & New York Transportation Company is to increase its fleet by the addition of two steamers for service between New York and Boston, and one to run between New York and Portland, Me.

The Mayor of Pittsburgh, Pa., has prepared bills which he will present to the Pennsylvania legislature, providing for the establishment of a public utilities commission for Pennsylvania similar to the public service commissions of New York state.

The Cincinnati, Hamilton & Dayton has finished its new yard at Toledo. It has capacity for 3,000 cars, as follows: receiving, 800 cars; classification, 850; holding, 550; storage, 250; outbound, 350; repair, 150; and caboose, 50. The yards have gravity tracks and are about four miles long.

The state of New Jersey has a commission which has been appointed to see about building a ship canal across the state, connecting the Raritan and Delaware rivers. This commission has just organized, with David Baird, of Camden, president, and F. W. Donnelly, of Trenton, secretary.

The Northern Central is preparing to beautify the grounds around its stations throughout the line from Baltimore to Harrisburg this summer. Elaborate schemes of the landscape gardeners are already being carried out at some of the stations. The most extensive work is that at Harrisburg Junction, just across the Susquehanna river from Harrisburg.

Between Mourmelon and Bethany, France, on January 22 a Farman aeroplane was flown 18 miles and back, at good speed, carrying four persons.

From a press despatch dated Berlin, January 23, it appears that experimental flights have been made there with a dirigible balloon 378 ft. long, capable of carrying 50 passengers. This airship, if it proves satisfactory, is to be bought for the use of the German army. It has four motors of 125 h. p. each, and six propellers.

The Pennsylvania Railroad is now running a Good Roads Educational train and proposes to send it all over the state. This will be the first time any eastern railway has run such a train. The Pennsylvania State College, the roads department of the National government and the State Highway Department of Pennsylvania will co-operate. The train consists of four cars, one fitted up with a lantern for the illustrations of the lectures, and another to be used for exhibits showing models of several types of roads, such as earth, sand-clay, gravel, macadam, and telford. Two platform cars will carry samples of road building machinery.

A meeting of a large number of officers and passenger representatives of the Pennsylvania Lines West of Pittsburgh was held in Chicago last week. Its purpose was to discuss plans for increasing business, handling it more economically and establishing better relations between the railways and the public. The meeting was presided over by Samuel Moody, passenger traffic manager of the Pennsylvania Lines West. It was attended also by J. R. Wood, passenger traffic manager of the Pennsylvania Railroad. Besides the passenger officers and representatives, some of the executive officers, including J. J. Turner, second vice-president, and G. L. Peck, general manager, of the Lines West, were present.

A little booklet describing investment securities has been published by N. W. Halsey & Co., New York. Under the title "The Most Satisfactory Bonds," the banking house shows by graphic illustration the comparative trend of the bond market for a period of years of railway, municipal and corporation bonds. Benefits to the investor resulting from the supervision of commissions are analyzed and discussed; and methods employed by banking houses in determining the safety issues which they contemplate purchasing are described. Among these are the analyses of reports to determine whether wages paid and the prices of the commodities sold conform to prevailing standards; the validity and duration of franchises; the character of the

community served; the physical condition of the property—whether the equipment is well maintained or has become obsolete; the character and ability of the company's management, and the appraisal of the physical value of the property.

The Lake Shore & Michigan Southern now uses telephones throughout its main lines, Buffalo to Chicago. The circuits are as follows: Buffalo to Erie, 88 miles, 21 telephone stations; Erie to Cleveland, 95 miles, 25 stations; Buffalo to Erie (message circuit), 88 miles, 21 stations; Cleveland to Toledo, Sandusky division, 110 miles, 37 stations; Cleveland to Toledo, Norwalk division, 116 miles, 35 stations; Toledo to Elkhart, Air Line Division, 133 miles, 44 stations; Toledo to Elkhart, Old Line Division, 143 miles, 35 stations; Elkhart to Chicago, 101 miles, 33 stations. A telephone despatching circuit is to be strung from Elkhart to Grand Rapids. The message and train despatching telephone circuits of this road at present form one of the most complete and extended railway telephone equipments now in use. The apparatus consists of Western Electric telephones and selectors, and a few details of the equipment are of the special design of Mr. Ryder, general superintendent of telegraph of the New York Central lines, who is one of the pioneers in the use of the telephone on railways.

### Washington to New York in 3 Hours and 55½ Minutes.

A special train of an engine and two cars, which was run to carry J. P. Morgan from Washington to New York over the Pennsylvania Railroad, last Monday, made the trip of 226.8 miles in 3 hours, 55 minutes and 30 seconds, or at the rate of 57.8 miles an hour. This is about 8½ minutes less than the time taken by the special train from Jersey City to Washington over the Central of New Jersey, the Reading and the B. & O. on December 16. The Pennsylvania train stopped at West Philadelphia 4 minutes to change engines, and at Manhattan Transfer 3 minutes to change from steam to electric power. The following is the record as published:

	A. M.	Miles.
Left Washington .....	11:12	....
Left Bowie .....	11:31	15.3
	P. M.	
Left Baltimore .....	12:02	40.0
Left Havre de Grace .....	12:39	75.0
Left Wilmington .....	1:12	108.5
Arrived West Philadelphia .....	1:42	136.3
Left West Philadelphia .....	1:46	....
Left Trenton .....	2:16	168.8
Left Millstone Junction .....	2:34	192.6
Left Perth Amboy Junction .....	2:44	205.5
Left Newark .....	2:53	216.8
Arrived at New York .....	3:07½	226.8

It will be seen that the speed over the New York division, West Philadelphia to New York, 90.5 miles averaged 67 miles an hour. The time over this division, including the stop for changing engines (81½ minutes) is only 2½ minutes greater than that of a fast run which was made from Philadelphia to Jersey City, March 24, 1902, and the distance to the New York terminal is 2.3 miles more than to the Jersey terminal.

### Strike on the Southern Pacific of Mexico.

Forty-eight engineers and 29 firemen, employed on the Southern Pacific of Mexico and the Sonora Railway, and belonging to the Brotherhood of Locomotive Engineers, went on strike on January 17. The strike followed several conferences between E. Corrigan, representing the Brotherhood, and officers of these railways. The employees demanded both increases in wages and recognition of the Brotherhood. The officers refused both demands. Their refusal to recognize the Brotherhood was based mainly on the fact that it is a United States organization which is not recognized by the laws of the Republic of Mexico, and therefore a railway doing business in Mexico could not legally enter into a contract with them. The demands for increases in pay ranged from 36 to 50 per cent. The lines were never completely tied up. Daylight passenger service has been maintained and some freight business has been moved. On January 21, 23 per cent. of the trains of the company were moving. Some of the employees who quit work are Mexicans, but most of them are Americans. It is probable that the places of all will



be filled by Mexicans. It is rather significant of the attitude of the Mexican government that the representatives of the Brotherhood who are conducting the strike, thought it expedient to return to the United States and direct it from this side of the line. The government has entirely refused to recognize the Brotherhood on the National Railways of Mexico.

#### New York Central and the Proposed B. R. & E.

W. S. Kallman, assistant freight traffic manager of the New York Central Lines, was called to the stand at the opening of the final hearing on the second application for a certificate of convenience and necessity for the proposed Buffalo, Rochester & Eastern between Buffalo and Troy, and gave testimony based on statistics of his road and from other sources. The total tonnage of freight carried by the New York Central to or originating at all points on or parallel with the proposed B. R. & E., and also between those points, amounted to 5,739,769 in 1909. If the new two track line of 300 miles could secure this entire traffic, it would still be nearly 2,500,000 tons short of the 8,000,000 tons which its promoters have testified they must secure in order to pay its operating expenses and interest charges. Careful analysis of these tables showed that the B. R. & E. could not obtain over 500,000 tons of this entire freight traffic, he said, while the most liberal estimates could not allow them over 850,000 tons. These estimates could be quadrupled, the witness believed, without establishing for the proposed road its ability to operate with any profit.

Syracuse and Schenectady freight traffic must be dropped from consideration in these tables, Mr. Kallman said, because the promoters of the proposed road had not declared in their testimony any intention of building branch lines to either of these important cities. North Tonawanda traffic also could not be claimed by the B. R. & E., because it would have no direct track connection with any railway at East Buffalo. At Rochester, Oneida, Utica and Troy only from 10 per cent. to 20 per cent. of the freight business of his road could possibly be secured by the new line, the witness asserted, as the New York Central was now in sharp competition for it with the Pennsylvania, Erie, Lehigh, B. R. & P., Lackawanna, N. Y., O. & W. and the D. & H. at these points. Superior stations, team track facilities and the large number of industries connected by private sidings at all these centers would go to prove this estimate liberal. Practically no part of the east bound freight destined to points on the Boston & Albany could be obtained by the B. R. & E., he pointed out, as the New York Central system lines had been able to secure such traffic in competition with the Erie, Lehigh, Lackawanna, Pennsylvania, Grand Trunk and Canadian Pacific and their western connections via the Boston & Maine and New Haven roads.

Almost none of the 2,614,236 tons received at the Niagara frontier in 1909 from the Lake Shore, Michigan Central and N. Y. C. & St. L. could be secured by the proposed road. Some 2,600 station freight agents and 450 officers and traveling freight agents were constantly soliciting freight business for the Central lines in 29 states throughout this country as well as in Canada. Mr. Kallman did not believe a railway of only 300 miles, with admittedly no eastern or western traffic relations, could get any appreciable amount of the business secured by the New York Central system with its 13,000 miles of track and its half century of established service. At Buffalo, Black Rock, Rochester, Syracuse, Utica, Schenectady and Troy, the Central has public team tracks with a capacity of from 102 to 641 cars, while its private sidings will hold from 522 to 3,335 freight cars at these points.

Assuming that the B. R. & E. had secured the entire tonnage received by the N. Y. C. & H. R. and West Shore from connecting lines at the Niagara frontier in 1909 destined to all points on and parallel with its lines and to New England points, Mr. Kallman testified, it would still lack 1,140,000 tons of the 4,000,000 which it admitted it must get of this class of traffic to operate with any profit. Though the B. R. & E. promoters testified that they must count on at least 1,000,000 tons of local freight each year, he estimated from the traffic records that the new road could not obtain a local tonnage of over 100,000. Less than 400,000 tons of west bound freight was all that the B. R. & E. could expect to receive, even if it deprived the Central of any participation in this class of traffic from the Boston

& Maine and New Haven roads, he testified—a figure of 100,000 tons below that which the B. R. & E. witnesses had claimed as necessary to operate that road. In order to fulfil a similar claim by the promoters of the new road that they must get 2,500,000 tons of miscellaneous freight, the B. R. & E. must get all such tonnage away from the Central and an equal amount from other trunk lines to come within 500,000 tons of its figure, witness showed.

Only 17,500 of the tonnage of ex-lake grain traffic forwarded from Buffalo via the Central and West Shore in 1909 could be obtained by the B. R. & E., Mr. Kallman showed by the records. As to the iron ore traffic from the lakes which had been claimed by the new road, he showed that no such freight was carried by the Central lines to any point in this state except Charlotte, which is located so that all such traffic must be unavailable for the B. R. & E.

A. H. Smith, vice-president and general manager of the N. Y. C. & H. R. showed that to pay 5 per cent. interest on the money invested in it, the new road must earn a gross income of not less than \$20,000,000 each year. Its gross earnings per mile would have to be from \$50,000 to \$70,000, or greater than those of 140 of the leading and oldest railways in the country over 200 miles in length. None of these roads had to compete with a parallel line of six tracks, running through substantially the same territory and not over five or six miles from it, he testified—a condition that it would be hard to find anywhere in the country. When compared with these old established roads the large gross earnings required by the proposed B. R. & E. to pay interest charges and operating expenses, he considered, showed the expectations of its promoters to be preposterous from the point of view of a railway expert.

Taking a few of the roads having the largest earning powers, Mr. Smith cited the large percentage of coal and ore carried by them—66.6 per cent. by the D. & H., 65.7 per cent. by the Pennsylvania, 63.9 per cent. by the D. L. & W., 78.1 per cent. by the P. & L. E., 66.6 per cent. by the P. & R., and 60.4 per cent. by the Lehigh. The B. R. & E. could not carry much, if any, coal, he testified, as it would have no line extending into the coal regions. Over 12,000,000 tons of freight would have to be carried by the new road, in the opinion of the witness, in order to pay expenses. An average tonnage per mile of over 40,000 would thus have to be carried. The futility of such an expectation was shown by the figures for 1909 which showed an average tonnage per mile of 11,380 for the Central, 16,290 for the Erie, 8,910 for the B. & M., 17,240 for the Lehigh, 21,120 for the D. & H., 21,350 for the Lackawanna and 10,500 for the N. Y. O. & W. The capitalization per mile of the new road would have to be between \$285,000 and \$400,000, the witness testified, which exceeded that of 16 of the best railways in the United States.

General tie-up on the Boston & Albany and Boston & Maine, which backed up freight on the Central line through the inability of the New England roads to take it, was the fundamental cause of the delays in service in 1907. Temporary insufficiency of cars and engines and large improvements in progress along the line he assigned as other reasons. At present the facilities of the B. & A. have been so improved by the Central that it is taking twice as many cars per day as it could in 1907. On January 1, 1910, 2,305 locomotives, 2,453 passenger cars, 65,838 freight cars and 3,670 company service cars were in service on the N. Y. C. & H. R., the witness testified, while improvements and extensions of terminals have helped to make the service given in 1908, 1909 and 1910 high class in every respect, as a matter of general knowledge. At Buffalo there had been no congestion of freight since 1907.

The trackage capacity of the system was at present unlimited, Mr. Smith said, and some of its divisions, such as the Hudson, handle as high as 125 trains per track per day, while the Mohawk and Western divisions are capable of handling more than double the tonnage now handled over them, provided the freight is taken away when delivered. The West Shore can be expected to handle with its two tracks half of what the main line could. Altogether the system could thus handle with its present equipment three times the tonnage it now moves.

The capital which it is proposed to spend on the B. R. & E., in benefiting connections beyond the state in either direction would be far more wisely spent, in his judgment, Mr. Smith testified, by developing lateral and tributary lines to open up more of the valleys and fertile regions of this state, thus helping

in a direct way the people who are asked to create the enterprise. He believed that there were times when a state could afford to be reasonably selfish in such a matter, especially when it had an assured means for reasonably regulating existing properties. As a competitor with the Central in carrying freight from Buffalo to Albany or Troy, he declared the B. R. & E. could never succeed because it would not have the same facilities, the same density, the same experience, nor as favorable location and water level grades.

#### Railway Securities Commission at Chicago.

The Hadley commission on regulation of railway securities conducted hearings at Chicago this week. The first to appear before it was Henry C. Adams, statistician of the Interstate Commerce Commission. Professor Adams declared that government control over the issuance of stocks and bonds is inextricably bound up with control of rates. Mr. Adams said in part:

"There are three parties interested in the stock and bond transactions of the carriers. The first comprises the stockholders, whose desire is for a high valuation of investment by which returns may be gaged. The second is the railway management, which is interested in maintaining the credit of the road that new capital may be available whenever needed. The third is the public, and the public, which furnishes the capital, has an equity in the railway properties just as much as either of the two others. It should know at all times just what the cash investment in the railways actually is in order that it may be able to determine what its own equity is." He believed that the basis of railway return should be the cost of original construction and of permanent improvements.

Marvin Hughitt, chairman of the Chicago & North Western, said that it is manifest that after a time either the states or the nation will have to yield in the matter of regulation of railways. It is to be hoped that as between the federal power and the state power the corporations will not be subjected to any more embarrassment than they are now laboring under.

"Obviously one authority to create and one to administer and govern would be less hazardous and more convenient, but how far the public advantage would be served by the concentration in the federal authority of all these jurisdictions exercised by the several states I have grave doubts.

"Personally I am much impressed with the necessity of proceeding in this matter with as much freedom from prejudice and haste as is consistent, because the states have rights that they would cling to tenaciously. It would free the corporation managers and directors from a great deal of labor to go to one authority for everything, but to act precipitately in this matter of federal control would be to place the corporation in a perilous situation and cause measureless harm to property values and investments.

"It would also bring to a stop, as I view the matter, all further enlargement of railway facilities until the questions are fought out between the constitutional lawyers and the federal authorities in the courts. All this, of course, is to be avoided. I doubt the advantage to the public to have the federal government go much further than it has gone in the control of the railways. Of all the difficulties that could happen to us nothing could be worse than to be left in the situation where we must obey or attempt to obey two jurisdictions; that would put the corporations in contempt of one or the other."

Mr. Hughitt said that he did not think the railways have ever oppressed the people of the country, either by stock and bond issues or by reason of the rates they have charged, and referred to the heavy reduction in rates that have taken place in the last 40 years. He said that the pioneer age of railways is passed and predicted that no more trunk lines will be built and that future progress in railway construction will be intensive rather than extensive.

F. A. Delano, president of the Wabash, favored federal rather than state regulation of securities if the effect of federal regulation shall be to exclude state regulation. He thought that the limit to which it would be safe to go would be some stiffening up of the law in respect to the responsibility of directors for the issuance of additional capital, and, perhaps, the requirements of a sworn statement as to the funds raised and their disposition. Legislation which would cover general principles is much to be preferred to legislation which attempts to prescribe de-

tail methods. He contended that it would be utterly impracticable to limit the issuance of capital stock at par for money or property of equivalent value. The prices at which securities can be sold depends on credit and credit depends on a multitude of conditions. The older railways no longer have first or second mortgage bonds to sell and most depend on "junior" securities. Some must raise capital by selling stock. No road can sell its stock at par or better unless it has extremely good credit; that is, in addition to earning a dividend it must earn a safe surplus. He defended the practice of issuing new stock at par to stockholders when old stock is selling above par. Whether or not this should be done is a question of judgment and expediency for the directors. He contended that if there was a relation between capitalization and rates it was the opposite of what was generally assumed. Railways differ very greatly in original cost of construction, in cost to replace and in value, and they all have to make the same rates. With respect to the capitalization of betterments, additions and extensions charged in the past to income, but which might be charged to capital, he said that this practice is bad, not so much because it hurts the general public as because it opens the door to trickery on the part of directors and may mislead investors. The law might properly limit any going back and capitalizing of such expenditures for a period of, say, two years previous unless such expenditures are clearly indicated in the accounts as suspense items. With respect to valuation he said that the action of the railways (defending themselves against rate reductions), seeking to show that if the reductions were made their property would be confiscated, is no reason for deciding that their rates should be based on the cost of reproducing the properties. Railway officers oppose valuation not because they think it will show the properties are overcapitalized, but because they do not think it is the proper basis for the regulation of rates.

#### Efficient Switch Lamps.

That a switch light should be large enough to be very quickly noticed from the most convenient distance, goes without saying; and it is equally well known that many lamps fall very far short of this standard, because of bad adjustment or defective maintenance. To correct faults of this kind the Southern Pacific has lately adopted the following rule:

"It is highly important that switch stands and lamp forks be so adjusted as to properly focus the switch light to give the maximum benefit to approaching trains. Roadmasters must, in their personal monthly inspection of switches, investigate this matter closely and by frequent inspection after dark see that the proper results are secured. Cases of switch lights located on or adjacent to sharp curves where a special focusing of the light may be required to give best results will be each made a subject of special study and roadmasters will receive instructions from division engineer."

#### The North Western Button.

The committees on safety of the Chicago & Northwestern have been heretofore noticed in the *Railway Age Gazette*. From a statement in the "North Western" (magazine), it appears that the members of these committees when traveling over the road on their inspection trips wear badges, in the shape of buttons, a picture of one of which is shown herewith. The letters on the button are made in gold, and are on a background of green and red enamel. There is now a safety committee on each division of the road, and they make regular tours throughout the lines of the division for the correction of undesirable conditions, where correction is practicable, and for the making of reports on more serious matters.



#### The Mason Laboratory at Yale.

The Mason Laboratory of Mechanical Engineering, for the Sheffield Scientific School, Yale University, which is now under construction, is to be 85 ft. wide on Hillhouse avenue and will extend 200 ft. back to Temple street, though the full width of the building extends only about two-thirds as far back. This building, with its equipment, will cost \$200,000, and is the gift of George G. and William S. Mason, of the class of 1888. They



have also given \$50,000 for its endowment. It is to be ready for use next autumn. The building is three stories high above the basement; and the testing machines, steam engines, electric generators and gas engines are to be on the first floor. The lecture room and small laboratories are on the second floor, and the third floor is to be used for research and for a mechanical technology exhibit. This will not be a museum but an exhibition of such modern machines as are of particular interest to students, to be brought to the school, and probably in most cases to be exhibited temporarily.

#### Twenty-fifth Year of International Railway Congress.

The International Railway Congress Association was established in 1885, and Mr. Weissenbruch, general secretary, prints in the *Bulletin* for January a historical review of its work during the quarter century. At the first session (in Brussels in 1885) the Congress represented 19 governments, 131 railway systems and 31,000 miles; and the number of delegates present was 289. At the eighth session, in Berne, Switzerland, last year, the number of governments represented was 48, railway systems 420, and mileage of railways 359,858; and the number of delegates present was 799. An abstract of the principal topics which have been discussed by Congress and the conclusions thereon fills 100 pages of the *Bulletin*. As to the function and usefulness of the association, Mr. Weissenbruch says:

It has been said in the daily press that the conclusions adopted at the general meetings have too often been general expressions in which the general public would vainly look for definite and precise solutions. These conclusions are necessary for starting the discussions, but they must be drafted in such a way as to make it possible for them to be adopted without too much opposition at the general meetings where the delegates who have specially studied them are relatively few in number. Every step in advance is in its origin the work of a minority; it must raise some doubts in a meeting where the majority has not yet recognized its necessity. But what does it matter? At the same time while the meeting formulates its impersonal opinion, each of the managers or engineers present at the meeting forms or modifies his personal opinion. His attention is drawn to the question. When he reaches home, he studies it again. He is much assisted both by the documents he brings home with him as well as by the relations of friendship or of mutual esteem which he has formed at the periodical meetings of the Congress. It is thus by no means one of the least results of the Congress Association that it forms, for railway men, a stimulus which takes them away from their daily routine. How much useful work may thus result from intelligent and better directed zeal!

#### Wood Preservers' Association.

The seventh annual meeting of the Wood Preservers' Association, held at the Auditorium Hotel, Chicago, closed January 19. The papers presented at this meeting were abstracted in the *Railway Age Gazette* of last week. At the closing business session the following officers were elected: President, John T. Logan, president of the National Lumber & Creosoting Company, Texarkana, Texas; first vice-president, Andrew Gibson, superintendent of treating plants of the Northern Pacific, Paradise, Mont.; second vice-president, R. J. Calder, secretary-treasurer of the International Creosoting & Construction Company, Galveston, Texas; third vice-president, D. Burkhalter, supervisor of creosoting plants of the Buffalo, Rochester & Pittsburgh, Bradford, Pa.; secretary-treasurer, F. J. Angier, timber treating engineer of the Kettle River Company, Chicago.

#### MEETINGS AND CONVENTIONS.

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

- AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass.  
 AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Scranton, Pa.; next meeting, June 22, 1911; Niagara Falls, N. Y.  
 AMERICAN ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS.—C. M. Burt, Boston, Mass.; next meeting, St. Paul, Minn., 1911.  
 AMERICAN ASSOCIATION OF LOCAL FREIGHT AGENTS' ASSOCIATION.—G. W. Dennison, Pennsylvania Co., Toledo, Ohio.  
 AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—O. G. Fetter, Carew building, Cincinnati, Ohio; 3d Friday of March and Sept.  
 AMERICAN ELECTRIC RAILWAY ASSOCIATION.—H. C. Donecker, 29 W. 39th St., New York; Jan. 27, New York.  
 AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 24 Park Place, New York; May 17, New York.  
 AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago; Oct. 17-19, 1911; St. Louis, Mo.  
 AMERICAN RAILWAY ENGINEERING AND MAINTENANCE OF WAY ASSOCIATION.—E. H. Fritch, Monadnock building, Chicago; March 21-23, 1911, Chicago.  
 AMERICAN RAILWAY INDUSTRIAL ASSOCIATION.—G. L. Stewart, St. L. S. W. Ry., St. Louis, Mo.; May 9, 1911; Detroit, Mich.  
 AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago; June 14-16, 1911, Atlantic City, N. J.  
 AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—O. T. Harfoun, Bloomington, Ill.  
 AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.  
 AMERICAN SOCIETY OF CIVIL ENGINEERS.—C. W. Hunt, 220 W. 57th St., New York; 1st and 3d Wednesdays, except June and August; New York.  
 AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.—D. J. Haner, 13 Park Row, New York; 3d Tuesday of each month, New York.  
 AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 29th St., New York.  
 ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—C. G. Phillips, 143 Dearborn St., Chicago; April 26, 1911; New Orleans, La.  
 ASSOCIATION OF RAILWAY CLAIM AGENTS.—J. R. McSherry, C. & E. I., Chicago; May, 1911; Montreal, Can.  
 ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—G. B. Colegrove, I. C. R.R., Chicago.  
 ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, 135 Adams St., Chicago; June 19, 1911; Boston, Mass.  
 ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 24 Park Place, New York; June 20-21, 1911, Cape May City, N. J.  
 CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 1st Tuesday in month, except June, July and Aug.; Montreal.  
 CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 413 Dorchester St., Montreal, Que.; Thursdays, Montreal.  
 CAR FOREMAN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 North 50th Court, Chicago; 2d Monday in month; annual, Oct. 9, Chicago.  
 CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Friday in January, March, May, Sept. and Nov.; Buffalo, N. Y.  
 CIVIL ENGINEERS' SOCIETY OF ST. PAUL.—D. F. Jurgensen, 116 Winter St., St. Paul, Minn.; 2d Monday, except June, July and Aug.; St. Paul.  
 ENGINEERS' SOCIETY OF PENNSYLVANIA.—E. R. Dasher, Box 704, Harrisburg, Pa.; 1st Monday after 2d Saturday; Harrisburg, Pa.  
 ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—E. K. Hiles, 803 Fulton building, Pittsburgh, Pa.; 1st and 3d Tuesday, Pittsburgh, Pa.  
 FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Richmond, Va.; June 21, St. Paul, Minn.  
 GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—H. D. Judson, 209 East Adams St., Chicago; Wednesday preceding 3d Thursday; Chicago; annual, July 19, Chicago.  
 INDIANAPOLIS RAILWAY AND MECHANICAL CLUB.—B. S. Downey, C., H. & D., Indianapolis, Ind.  
 INTERNATIONAL MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York; next convention, Omaha, Neb.  
 INTERNATIONAL RAILWAY FUEL ASSOCIATION.—D. B. Sebastian, La Salle St. Station, Chicago; May 15-18, 1911; Chattanooga, Tenn.  
 INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—L. H. Bryan, D. & I. R. Ry., Two Harbors, Minn. Next convention July 25-27, Chicago.  
 INTERNATIONAL RAILWAY CONGRESS.—Executive Committee, rue de Louvain, 11 Brussels; 1915, Berlin.  
 INTERNATIONAL RAILWAY MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, Lima, Ohio.  
 IOWA RAILWAY CLUB.—W. B. Harrison, Union Station, Des Moines, Iowa; 2d Friday in month, except July and August; Des Moines.  
 MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago; June 19-21, 1911, Atlantic City, N. J.  
 MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION, OF UNITED STATES AND CANADA.—A. P. Dane, B. & M., Reading, Mass.; Sept. 12-15, 1911, Atlantic City, N. J.  
 NEW ENGLAND RAILROAD CLUB.—G. H. Frazier, 10 Oliver St., Boston, Mass.; 2d Tuesday in month, except June, July, Aug. and Sept.; Boston.  
 NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August; New York.  
 NORTHERN RAILWAY CLUB.—C. L. Kennedy, C., M. & St. P.; 4th Saturday; Richmond, Va.; 20th annual, June 21st, 1911, St. Paul, Minn.  
 OMAHA RAILWAY CLUB.—A. H. Christiansen, Barker Bldg.; second Wed.  
 RAILWAY CLUB OF KANSAS CITY.—C. Manlove, 1008 Walnut St., Kansas City, Mo.; 3d Friday in month; Kansas City.  
 RAILWAY CLUB OF PITTSBURGH.—C. W. Alleman, P. & L. E., Pittsburgh, Pa.; 4th Friday in month, except June, July and August; Pittsburgh.  
 RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Bethlehem, Pa.; March 20, Chicago; annual, Oct. 10, Colorado Springs, Colo.  
 RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, Box C, Collinwood, Ohio; annual, May 22-24, 1911; Milwaukee, Wis.  
 RICHMOND RAILROAD CLUB.—F. O. Robinson, Richmond, Va.; 2d Monday, except June, July and August.  
 ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—Walter E. Emery, P. & P. U. Ry., Peoria, Ill.; Oct., 1911; St. Louis.  
 ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug.; St. Louis.  
 SOCIETY OF RAILWAY FINANCIAL OFFICERS.—C. Nyquist, La Salle St. Station, Chicago; Sept. 12-14, St. Paul, Minn.  
 SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. Ry., Montgomery, Ala.  
 SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Prudential bldg., Atlanta, Ga.; 3d Thurs.; Jan., April, August and Nov.; Atlanta.  
 TOLEDO TRANSPORTATION CLUB.—L. G. Macomber, Woolson Spice Co., Toledo, Ohio; 1st Sat.; annual, May 6, 1911, Toledo.  
 TRAFFIC CLUB OF CHICAGO.—Guy S. McCabe, La Salle Hotel, Chicago; meetings monthly, Chicago.  
 TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 290 Broadway, New York; last Tuesday in month, except June, July and August; New York.  
 TRAFFIC CLUB OF PITTSBURGH.—T. J. Walters, Oliver building, Pittsburgh, Pa.; meetings monthly; Pittsburgh.  
 TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7042 Stewart Ave., Chicago; annual, June 20, 1911; Baltimore, Md.  
 TRANSPORTATION CLUB OF BUFFALO.—J. M. Sells, Buffalo; 1st Sat. after 1st Wed.; annual, Dec. 11, 1911.  
 TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thomson, N. Y. C. & H. R., East Buffalo, N. Y.; annual, August, 1911, Chicago.  
 WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, P. O. Box 1707, Winnipeg, Man.; 2d Monday, except June, July and August; annual, May 8, Winnipeg.  
 WESTERN RAILWAY CLUB.—J. W. Taylor, Old Colony building, Chicago; 3d Tuesday of each month, except June, July and August.  
 WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, 1735 Monadnock Block, Chicago; 1st Wednesday in month except July and August; Chicago.  
 WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, First National Bank bldg., Chicago.

## Traffic News.

The Southern Railway has established a branch office of its land and industrial departments at Harrisburg, Pa.

The Baltimore & Ohio last week ran an agricultural educational train over its lines in eastern Ohio, between Wheeling and New Concord, and between Zanesville and Marietta. The lecturing was in charge of Prof. A. B. Graham, of the Ohio State University.

Beginning on February 1 the Burlington will run an express and passenger train from Chicago to St. Paul, Minn., daily in 10 hours and 15 minutes, which is 2 hours and 30 minutes less time than is now taken by any other train on the Burlington. This road, in connection with the Great Northern and the Northern Pacific, will reduce the time of express (parcels) from New York to Seattle, Wash., by 24 hours.

The ten principal express companies, at a conference held in New York last week, agreed to make reductions in the rates for the transportation of shipments of merchandise which have to be carried over the lines of two or more companies; the object being to make the tariffs as simple as they would be if there were but one company doing business throughout all the lines of these ten companies throughout the United States and Canada.

The movement of freight over the Panama Railroad has increased so much that an extension of terminal facilities is needed. In the month of November the westbound movement was 26,513 tons—about one-quarter larger than in the same month of 1909, while the eastbound movement, 22,734 tons, was almost double the movement of the previous year. It is said that the increase is due to improved steamship service from the Isthmus to New York and San Francisco.

The Pennsylvania will run an agricultural instruction train in New Jersey January 31-February 3. Former experiments of this kind in New Jersey have been so successful that the time of the trip is now increased from three days to four, and the train will have an additional car, to contain exhibits to be used by the lecturers for illustrations. There will be with the train eight professors and other representatives of the New Jersey State Agricultural College.

Bates & Chesebrough, who recently established the California-Atlantic Steamship Company, have announced a rate of 40 cents per 100 lbs. on lumber moving from Portland, Ore., to New York, via Panama. The announcement was made in a letter by J. W. Chapman, traffic manager of this company to the Oregon & Washington Manufacturers' Association. He said that the first ship to sail from Portland with a cargo of lumber will leave there on February 15.

The New York State superintendent of public works reports that the canals of the state carried last year 3,073,412 tons of freight, which is slightly less than the total for the preceding year. More than two-thirds of this freight was "way"; the through freight amounting only to 494,208 tons eastward and 310,972 tons westward. During the past season more than 2,000 permits were issued for the use of pleasure craft on the canals, and the superintendent recommends that laws be passed to regulate this traffic. With the enlarged canal it will be necessary, or at least, very desirable, to have charts of the canal system, for a large part of the new canal will consist of open lock and river navigation where the channel will be tortuous and of varying width and depth.

### Local Tickets on the B. & A.

The letter printed in our issue of January 13, page 74, in which it was said that local tickets on the Boston & Albany are not accepted in a direction opposite to that which appears from a reading of the ticket, has brought out an answer from an officer of the road which says that while this rule was in effect for a few months, the acceptance of local first class tickets in either direction has been universal throughout the company's lines since July 15 last.

## INTERSTATE COMMERCE COMMISSION.

### Reparation Awarded.

*Barr Chemical Works v. Philadelphia & Reading et al. Opinion by Chairman Clements:*

1. The fifth class import rate of 27 cents per 100 lbs. applied to the shipment of glue stock from Boston to Chicago found unreasonable to the extent that it exceeded the sixth class domestic rate of 24 cents per 100 lbs. The rate on this article should not exceed for the future the rate simultaneously in effect on "fleshings, tanner's or slaughter-house offal, and wet hide trimmings, carload," between the same points. Reparation awarded. (20 I. C. C. 77.)

### Further Class Rate Suspensions.

Recently the commission directed the suspension until March 1 of certain class rates from New Orleans to points in Mississippi, Helena, Arkansas and Memphis, Tenn., filed by the Yazoo & Mississippi Valley and the Illinois Central. An order has been issued further suspending them until September 1.

### Minimum Car Load Rule.

*William K. Noble v. Baltimore & Ohio Railroad Company, et al. Opinion by Commissioner Prouty:*

Tariff of defendants should have provided that when a car of the capacity ordered by the shipper could not be promptly furnished and a car of a different capacity was furnished, such car might be used upon the basis of the minimum fixed for the car which was ordered. Such a rule should be established by defendants for the future. Reparation awarded because of failure of defendants to establish and apply the above rule. (20 I. C. C. 72.)

### The Commission Will Bring Indictments for Unlawful Overcharge.

*National Refrigerator & Butcher Supply Company v. Illinois Central Railroad Company et al. Opinion by Commissioner Lane:*

On March 20, 1908, the complainant shipped one box of hardware, weighing 220 pounds, from Cleveland, Ohio, to Memphis, Tenn., over the lines of the Baltimore & Ohio, the Baltimore & Ohio Southwestern, and the Illinois Central railways, upon which there was charged and collected the amount of \$2.44, based upon a rate of \$1.09 per 100 pounds. But the lawfully published rate, as admitted by the defendants, was 70 cents per 100 lbs., and reparation is awarded in the amount of 88 cents, with interest thereon from March 20, 1908.

Complaints of the character herein considered should never be brought before this commission. There should be no necessity for appealing to governmental authority to award damages for plain overcharges. It is the plain duty of the carriers to collect no more than the published rate; to do otherwise is a crime for which indictment will lie and for which there is serious punishment provided in the law against both the carrier and its agent. When there is a contest between the shipper and carrier as to the lawful rate applicable, arising out of an obscure tariff, there may properly be appeal to this commission to give construction to the schedules. But there is but one count of such character involved herein. The others are based upon admitted deviations from the tariff rates. If by inadvertence the wrong rate had been applied, the carrier should have hastened, upon the application of the shipper, to remedy its mistake, and this no more for its own protection against prosecution under the law than out of a desire to do justice to its patrons. It is not too strong a statement of the fact to say that certain carriers seem at times willfully bent upon withholding for as long a period as may possible moneys to which they are not entitled. The commission has a mass of correspondence carrying such complaints. The law expressly makes it illegal for a carrier to exact more than the lawful rate, and the commission will regard it as its duty henceforward to enforce this provision by indictment in cases where the carrier appears willfully to have required payment of an illegal amount or refuses to make restitution immediately on its attention being called to its improper and unlawful action. (20 I. C. C., 64.)



## REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF NOVEMBER, 1910. (SEE ALSO ISSUES JANUARY 13 AND 20.)

Name of road.	Mileage operated at end of period.	Operating revenues			Operating expenses			Total.	Net operating revenue (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or dec.) comp. with last year.
		Freight.	Passenger.	Inc. misc.	Way and structures.	Maintenance of equipment.	Traffic.						
Atchafalaya, Topeka & Santa Fe.....	7,546 <sup>a</sup>	\$5,624,893	\$1,885,624	\$8,100,000	\$1,192,322	\$1,192,322	\$142,369	\$4,949,559	\$3,153,341	.....	\$197,712	\$2,955,629	\$266,278
Central New England.....	277	237,837	24,969	276,752	58,195	58,195	2,643	155,592	121,160	.....	9,000	112,160	33,983
Chicago & Alton.....	1,025 <sup>b</sup>	864,463	322,718	1,275,040	233,596	264,236	490,250	34,814	1,031,175	.....	35,000	185,988	243,542
Chicago & Erie.....	269	314,087	70,192	423,514	51,180	87,576	18,096	362,015	61,455	.....	11,387	50,068	46,894
Chicago, Burlington & Quincy.....	9,091 <sup>b</sup>	5,599,206	1,816,435	8,050,976	846,576	1,368,030	118,916	5,122,117	2,928,859	.....	250,454	2,668,315	402,965
Chicago, Indiana & Southern.....	329	315,989	21,162	337,151	347,517	62,109	9,703	1,212,117	2,928,859	.....	13,575	66,855	16,748
Chicago, Milwaukee & Puget Sound.....	1,865 <sup>b</sup>	1,346,493	113,588	1,492,268	82,938	157,860	31,643	1,346,493	1,346,493	.....	13,575	66,855	16,748
Chicago, Milwaukee & St. Paul.....	7,511	4,144,523	1,092,934	5,762,846	344,346	81,973	103,767	4,431,535	1,341,321	.....	216,431	1,124,894	105,782
Chicago, St. Paul, Minneapolis & Omaha.....	1,744	1,055,240	378,760	1,527,211	128,046	165,750	23,576	1,393,935	600,480	.....	60,934	531,922	73,227
Cumberland Valley.....	1,622	207,451	50,794	269,694	37,997	50,297	5,527	183,935	138,650	.....	13,575	66,855	16,748
Delaware, Lackawanna & Western.....	930	3,733,788	586,575	3,146,620	336,460	432,053	55,287	1,818,411	1,328,209	.....	138,650	1,225,557	298,243
Duluth & Iron Range.....	188 <sup>b</sup>	381,341	30,515	411,856	481,476	76,707	1,664	1,217,722	1,141,128	.....	20,514	1,197,214	18,914
Duluth, Missabe & Northern.....	293	433,596	41,157	481,476	76,707	1,664	1,664	1,217,722	1,141,128	.....	20,514	1,197,214	18,914
El Paso & Southwestern Co.....	901 <sup>b</sup>	519,675	88,223	607,900	37,997	50,297	5,527	183,935	138,650	.....	13,575	66,855	16,748
Elgin, Joliet & Eastern.....	1,959	3,104,721	721,350	4,114,631	489,656	691,132	92,511	2,718,990	1,395,641	.....	120,631	1,296,222	284,695
Florida East Coast.....	583	1,612,381	136,928	2,250,164	42,922	40,436	4,240	183,935	138,650	.....	13,575	66,855	16,748
Fort Worth & Denver City.....	454	368,271	136,928	525,164	42,922	40,436	4,240	183,935	138,650	.....	13,575	66,855	16,748
Georgia Southern & Florida.....	395	118,756	155,057	209,587	25,261	72,701	4,907	250,540	239,151	.....	15,253	227,890	19,306
Grand Trunk Western.....	347	326,881	154,917	518,365	50,662	77,168	16,648	396,173	345,660	.....	15,253	227,890	19,306
Maine Central.....	932	1,466,981	214,388	1,743,686	113,602	114,515	8,107	1,558,193	1,222,392	.....	31,697	89,347	28,054
Minneapolis, St. Paul & Sault Ste. Marie.....	3,572 <sup>b</sup>	1,709,369	416,984	2,526,657	167,227	278,183	41,276	2,804,841	2,040,222	.....	35,879	170,118	59,099
New York, Chicago & St. Louis.....	561	1,024,327	120,531	1,244,858	130,843	177,148	48,582	1,230,603	716,381	.....	104,651	621,353	383,859
New York, Philadelphia & Norfolk.....	112	221,331	31,280	272,785	25,639	44,688	3,796	665,537	255,040	.....	34,500	218,556	104,422
New York, Susquehanna & Western.....	1,951	1,637,676	312,199	2,249,921	25,936	22,202	1,129	193,339	99,987	.....	11,771	90,510	19,249
Norfolk & Western.....	602	1,653,341	56,631	2,267,714	340,836	613,161	45,443	1,946,894	1,020,820	.....	93,000	926,377	282,485
Norfolk Southern.....	601 <sup>b</sup>	1,653,341	56,631	2,267,714	340,836	613,161	45,443	1,946,894	1,020,820	.....	93,000	926,377	282,485
Northern Pacific.....	376	1,156,080	1,432,154	5,972,746	481,235	43,223	7,567	3,192,473	2,780,405	.....	10,500	30,905	22,000
Pennsylvania.....	351	1,278,864	264,558	1,543,422	59,626	43,223	2,278	1,089,996	77,416	.....	10,500	30,905	22,000
Pittsburgh & Lake Erie.....	191	215,166	55,165	270,331	39,791	55,171	5,183	223,153	41,405	.....	10,500	30,905	22,000
Rutland.....	468	1,777,885	88,495	300,528	48,101	41,619	14,463	341,509	674,181	.....	25,200	64,368	23,498
San Antonio & Aransas Pass.....	724	238,169	103,479	343,431	89,129	49,558	5,050	216,775	96,298	.....	11,053	72,700	2,855
Toledo, St. Louis & Western.....	451	288,191	31,286	342,796	44,746	50,755	11,057	288,133	86,298	.....	13,900	98,746	39,399
Trinity & Brazos Valley.....	463	198,246	31,286	250,657	31,811	32,013	7,885	230,150	112,646	.....	3,500	67,452	11,233
Wabash.....	2,515	1,820,487	578,036	2,585,197	303,568	413,610	75,330	1,879,086	706,111	.....	76,676	625,999	141,798

FIVE MONTHS OF FISCAL YEAR 1911.													
Atchison, Topeka & Santa Fe.....	7,546	\$25,388,823	\$9,567,838	\$37,889,815	\$5,470,192	\$5,486,999	\$702,237	\$10,614,973	\$773,427	\$23,047,829	\$14,841,986	\$1,228,444	\$13,613,542
Central New England.....	277	1,105,285	167,235	1,339,153	101,909	101,909	10,252	383,530	14,672	823,351	515,802	45,000	470,802
Chicago & Alton.....	1,025 <sup>b</sup>	4,091,959	1,989,532	6,527,253	963,672	1,035,413	190,344	3,838,108	171,663	4,698,600	1,638,653	179,600	1,638,777
Chicago & Erie.....	269	1,673,288	376,582	2,227,059	283,479	464,370	99,999	1,832,525	47,724	1,832,525	394,534	56,488	338,046
Chicago, Burlington & Quincy.....	9,091 <sup>b</sup>	26,771,485	10,836,420	40,810,246	5,982,016	6,247,551	687,979	12,447,885	914,857	16,280,958	14,529,958	1,252,304	13,252,063
Chicago, Indiana & Southern.....	329	1,277,929	135,708	1,454,104	225,872	284,132	47,480	1,171,359	45,021	2,171,359	292,745	67,875	216,632
Chicago, Milwaukee & Puget Sound.....	1,865 <sup>b</sup>	5,501,766	631,900	6,287,881	304,407	591,318	152,605	3,194,886	58,745	3,194,886	3,092,521	18,344	2,921,699
Chicago, Milwaukee & St. Paul.....	7,511	20,819,780	6,732,679	30,151,152	4,373,050	3,904,567	540,567	21,304,910	430,198	21,304,910	8,810,242	1,080,204	7,845,719
Chicago, St. Paul, Minneapolis & Omaha.....	1,744	4,891,334	2,163,601	7,115,061	970,216	1,313,556	121,989	4,679,395	141,774	4,679,395	3,880	294,777	2,337,009
Cumberland Valley.....	1,62	1,019,097	304,120	1,384,768	163,589	186,960	31,019	813,546	29,263	813,546	571,222	28,859	543,798
Delaware, Lackawanna & Western.....	930	11,082,608	3,469,733	15,501,443	2,033,239	2,120,355	308,633	9,169,202	276,600	9,169,202	6,332,241	673,250	5,758,477
Duluth & Iron Range.....	188 <sup>b</sup>	4,762,124	128,469	4,936,070	489,121	326,888	2,481	1,647,727	45,706	1,647,727	3,288,343	199,031	3,106,548
Duluth, Missabe & Northern.....	293	7,099,138	209,672	7,346,959	503,959	513,245	8,508	962,617	59,788	2,048,117	1,299,958	297,920	5,052,756
El Paso & Southwestern Co.....	901 <sup>b</sup>	2,452,038	404,523	3,009,652	393,632	393,709	52,730	817,572	111,871	1,769,694	1,239,958	51,835	1,139,670
Elgin, Joliet & Eastern.....	1,808 <sup>a</sup>	3,439,594	404,523	3,648,958	527,120	705,339	20,819	2,408,535	67,222	2,408,535	1,240,423	96,800	1,139,670
Erie.....	1,959	15,620,543	4,291,490	21,390,153	2,715,178	3,532,849	513,288	10,584,837	398,639	13,774,791	7,615,362	77,000	1,163,423
Florida East Coast.....	583	586,243	339,004	1,063,366	219,173	198,072	23,278	419,542	40,487	899,557	164,013	68,656	95,337
Fort Worth & Denver City.....	454	1,541,840	783,695	2,428,386	236,703	352,341	31,127	70,244	71,640	1,412,057	1,016,339	50,000	959,344
Georgia Southern & Florida.....	395	1,417,529	331,082	1,998,810	111,407	196,839	30,223	306,243	45,496	1,880,998	248,633	40,383	192,250
Grand Trunk Western.....	347	1,417,650	905,361	2,502,150	301,686	384,599	88,859	1,886,860	63,219	1,880,998	621,132	158,382	1,925,048
Maine Central.....	932	2,256,568	1,548,025	4,045,552	749,962	523,405	8,508	2,859,007	108,566	2,839,007	1,209,645	15,280	1,045,188
Minneapolis, St. Paul & Sault Ste. Marie.....	3,572 <sup>b</sup>	2,972,720	2,365,338	9,947,059	1,079,542	1,363,948	207,551	6,061,892	201,673	6,061,892	3,885,167	556,414	3,421,575
New York, Chicago & St. Louis.....	561	3,859,240	706,192	4,797,553	549,976	638,598	259,617	3,383,381	80,053	3,383,381	1,414,172	172,506	1,234,521
New York, Philadelphia & Norfolk.....	112	1,207,498	189,832	1,509,005	163,443	247,078	24,279	1,044,116	54,820	1,044,116	464,889	39,200	425,669
New York, Susquehanna & Western.....	1,951	1,818,258	289,283	2,244,802	170,737	234,925	10,640	1,445,349	22,946	763,450	477,852	58,401	410,358
Norfolk & Western.....	1,951	1,818,258	289,283	2,244,802	170,737	234,925	10,640	1,445,349	22,946	763,450	477,852	58,401	410,358
Norfolk Southern.....	602	20,866,870	8,611,077	31,467,703	4,251,740	3,999,894	446,496	17,981,197	67,997	9,699,489	5,859,600	4,652	5,899,948
Northern Pacific.....	6,019 <sup>b</sup>	7,101,434	828,569	1,649,550	260,472	203,850	13,797	1,066,714	405,908	17,981,197	13,482,966	251,879	12,196,135
Peoria & Eastern.....	376	1,692,129	1,610,211	3,302,340	255,225	332,212	619,608	2,346,155	44,662	1,066,714	582,816	5,500	530,316
Pittsburgh & Lake Erie.....	191	6,723,536	747,731	7,676,945	936,830	609,663	73,300	3,485,547	117,840	3,485,547	1,155,232	30,000	404,579
Rutland.....	468	840,056	578,130	1,599,218	241,788	321,618	33,678	1,077,600	32,794	1,077,600	521,618	55,241	466,377
San Antonio & Aransas Pass.....	724	1,410,538	514,676	2,029,553	303,238	241,128	24,562	632,608	46,834	1,248,370	781,183	46,000	735,183
Toledo, St. Louis & Western.....	451	1,344,016	218,444	1,663,174	231,033	208,837	44,704	1,080,812	49,172	1,080,812	582,362	69,500	512,862
Trinity & Brazos Valley.....	463	172,868	30,408	168,950	167,781	168,950	39,807	410,254	52,306	439,098	91,310	17,500	73,810
Wabash.....	2,515	8,766,837	3,576,433	13,273,647	1,495,919	1,981,441	396,221	9,024,135	335,844	9,024,135	4,249,312	373,678	3,871,139

Mileage operated on November 30, 1909—\* 7,459 miles; † 998 miles; ‡ 9,021 miles; § 1,400 miles; ¶ 168 miles; || 867 miles; a 770 miles; b 3,425 miles; c 5,691 miles; — indicates Deficits, Losses and Decreases.

## STATE COMMISSIONS.

William O. Seymour, chairman of the Connecticut State Railroad Commission, and a member of that body for the past 20 years, died suddenly on Tuesday at his home in Ridgefield.

The Louisiana railway commission has issued an order for a general hearing on the proposed reduction in express rates. The rates proposed by the commission run from 35 cents per 100 lbs. of merchandise for 20 miles or less to \$2 per 100 lbs. for merchandise for over 350 miles.

The United States circuit court having issued a temporary injunction restraining the Louisiana railway commission from enforcing its order in the case of *J. W. Thompson & Co. v. the Texas & Pacific et al.*, reported previously in these columns, the commission has ordered all lines not specifically enjoined from putting into effect rates on sand and gravel prescribed by the commission to comply with the order, protecting the rates named therein on all shipments of sand and gravel, carloads, between points in the state.

**California: Discrimination Against Los Angeles in Favor of San Francisco.**

*California Associated Jobbers of Los Angeles v. Southern Pacific et al. Jobbers' and Manufacturers' Association of Stockton and Traffic Bureau of the Merchants' Exchange of San Francisco interveners.*

The complaint is that rates from Los Angeles to towns in the San Joaquin valley are unduly high as compared with rates into the valley from San Francisco. The commission finds that rates, for instance, from Los Angeles to Bakersfield, a distance of 168 miles, are from 50 to 73 per cent. higher than rates from San Francisco to Berenda, a distance of 168 miles. The commission, therefore, orders a reduction in the rates from Los Angeles to points in the San Joaquin valley north of Bakersfield. The commission holds that in this case it is not fair to base a rate on the cost of service on a particular part of the line, and that therefore the fact that it is more expensive to operate from Los Angeles over the Tehachapi mountains into the valley than it is to run trains from San Francisco, on a nearly level road, into the valley, is not a valid reason for higher rates from Los Angeles than from San Francisco.

*Commissioner Loveland dissenting:*

With the finding of the majority opinion that the Los Angeles-San Joaquin valley rates are high as compared with rates from other competitive coast points, I most earnestly dissent. In my judgment the comparison of rates into the San Joaquin valley on a mileage basis should be between Stockton and Los Angeles, because water competition controls the rate from San Francisco to Stockton; in other words, for 78 miles from San Francisco toward the valley Stockton is entitled, as compared with San Francisco, to the advantages of being 78 miles nearer to the valley points than is San Francisco, and San Francisco is entitled to enjoy just that differential over Stockton that water competition and other competitive conditions will give her. In my judgment this commission has no authority in law to order railways to charge rates which will turn the business over to competing water carriers. I do not agree with my associates that the much heavier cost of service over the two mountain ranges should be ignored and Los Angeles given an advantage over Sacramento and Stockton on a broad mileage basis.

## COURT NEWS.

The New York State Court of Appeals in a decision handed down last Tuesday, denies the authority of the New York State Public Service Commission, First district, over matters of public health. These are within the province of the New York City Board of Health. This decision reverses the lower courts, which had confirmed an order of the public service commission abating an alleged nuisance in the yard of the New York, New Haven & Hartford at 131st street, New York.

On October 2 last the railway from Melipilla, Chile, to San Antonio was formally opened, in the presence of the vice-president of the republic.

## Railway Officers.

### Executive, Financial and Legal Officers.

R. G. Shorter has been appointed auditor of the Marietta, Columbus & Cleveland, with office at Marietta, Ohio, succeeding Hudson Campbell, acting auditor.

W. H. Fulton, superintendent and purchasing agent of the Stewartstown Railroad, has been elected vice-president, and will also retain his duties as superintendent, with office at Stewartstown, Pa.

F. D. Dale has been made a representative of the accounting department of the Union Pacific at Leavenworth, Kan., in connection with matters pertaining to business of the Leavenworth, Kansas & Western. This corrects an item which appeared in our issue of January 20.

Hoyt King, formerly land commissioner of the Sanitary District in Chicago, has been elected vice-president and general manager of the Chicago Transfer & Clearing Company, succeeding James T. Maher, resigned, to go to the Great Northern at St. Paul, Minn.

Joseph F. Titus, for the last four years assistant to J. T. Harahan, former president of the Illinois Central, has resigned to become assistant treasurer of the Berkshire Life Insurance Company, and the duties of his former office will be assumed mainly by M. P. Blauvelt, comptroller.

A. R. Zoelsmann has been appointed auditor of the Chester, Perryville & Ste. Genevieve, the Cape Girardeau & Thebes Bridge Terminal, the Cape Girardeau & Chester and the Saline Valley, with office at Cape Girardeau, Mo., succeeding R. H. Schultz, appointed general superintendent.

M. B. Van Zandt, assistant treasurer and assistant secretary of the Chicago, St. Paul, Minneapolis & Omaha and the Chicago & North Western, has been appointed treasurer of both these companies, with office at New York, succeeding R. H. Williams, who has been retired on account of ill health. A. S. Pierce succeeds Mr. Van Zandt, with office at New York.

The office of Roberts Walker, chairman of the executive committee and general counsel of the Chicago, Rock Island & Pacific, and president of the Rock Island Company, has been transferred from New York to Chicago. G. T. Boggs, vice-president, assistant secretary and assistant treasurer of the Chicago, Rock Island & Pacific, and vice-president, secretary and treasurer of the Rock Island Company, at New York, has resigned, effective February 1, and J. J. Quinlan, assistant secretary and assistant treasurer of the Chicago, Rock Island & Pacific, and vice-president, assistant secretary and assistant treasurer of the Rock Island Company, in addition to his other duties, succeeds Mr. Boggs as secretary and treasurer of the Rock Island Company, with office at New York.

William J. Dickinson, who was elected second vice-president of the Louisville & Nashville, with office at New York, as previously announced in these columns, was born in 1852 in England. He was educated in the public schools and began railway work in September, 1882, with the Louisville & Nashville, and was in the continuous service of that company for 23 years. He held various clerical positions in the office of the auditor of receipts until 1891, and then for a short time he was a traveling auditor. In December, 1891, he was appointed assistant auditor of receipts, and was promoted to auditor of receipts in July, of the following year, remaining in that position for over five years. He was then consecutively freight claim agent for two years, chief clerk in the traffic department two years, comptroller for four months, and then third vice-president in charge of traffic for four years. Mr. Dickinson was out of railway service from 1905 to 1910.

### Operating Officers.

J. C. Hagerty, superintendent of the Baltimore & Ohio Southwestern at Cincinnati, Ohio, has had his office transferred to Seymour, Ind., effective within six weeks.

H. E. Allen, superintendent of the Chicago, Rock Island & Gulf at Amarillo, Texas, has been appointed superintendent of the Trinity & Brazos Valley, with office at Teague, Texas, suc-



ceeding J. Munday, resigned to accept service with another company.

C. J. Balch has been appointed to the new position of assistant to general manager of the San Pedro, Los Angeles & Salt Lake, with office at Los Angeles, Cal. Through a typographical error it was stated in our issue of January 20, that Mr. Balch had been appointed assistant general manager.

W. J. Stoneburner, superintendent of the Missouri, Kansas & Texas at Denison, Texas, has been appointed superintendent, with office at Greenville, Texas, succeeding R. J. Sullivan, resigned to accept service with another company. J. Munday, superintendent of the Trinity & Brazos Valley at Teague, Texas, succeeds Mr. Stoneburner.

R. H. Schultz, auditor and general freight and passenger agent of the Chester, Perryville & Ste. Genevieve, the Cape Girardeau & Chester, the Cape Girardeau & Thebes Bridge Terminal and the Saline Valley at Cape Girardeau, Mo., has been appointed general superintendent, with office at Cape Girardeau, in charge of matters relating to traffic and operation.

H. M. Gain has been appointed passenger trainmaster of the Eastern division of the Grand Trunk, with office at Montreal, Que.; S. L. Trusler, assistant trainmaster, at Hamilton, Ont., has been appointed passenger trainmaster of the Middle division, with office at Toronto, Ont., and H. W. Matthews has been appointed passenger trainmaster of the Western division, with office at Detroit, Mich.

Harvey Hansford Morris, whose appointment as superintendent of the Huntington division of the Chesapeake & Ohio, with office at Huntington, W. Va., has been announced in these columns, was born April 11, 1873, at Coalburg, and was educated in the common schools. He began railway work February 7, 1890, with the Chesapeake & Ohio as a telegraph operator, and in October, 1898, he was promoted to train despatcher, at Hinton. He remained in that position until June, 1904, when he was made trainmaster of the Guyandotte Valley branch, and in November, 1907, he was promoted to trainmaster of the Kanawha coal district, with headquarters at Handley, which position he held at the time of his recent appointment as superintendent.

William Herbert Johnson, whose appointment as assistant superintendent of the Winston-Salem district of the Atlantic Coast Line, with office at Florence, S. C., has been announced in these columns, was born October 26, 1871, at Charlestown, W. Va., and was educated in the public schools. He began railway work in March, 1889, as telegraph operator on the Shenandoah Valley, now a part of the Norfolk & Western, and in August of the same year he went to the Norfolk & Western, and was promoted to train despatcher in June, 1891. In February, 1898, he went to the Illinois Central as a train despatcher at McComb City, Miss., and in January, 1899, returned to the service of the Norfolk & Western, as train despatcher. He was promoted in 1902 to assistant chief despatcher, becoming chief despatcher in April, 1905, on the Radford division, and in February, 1907, he was appointed assistant trainmaster of the Norfolk division. He left the service of the Norfolk & Western to become superintendent of construction on the Winston-Salem Southbound, and when this new line was opened for operation he was appointed assistant superintendent of the Atlantic Coast Line.

#### Traffic Officers.

C. D. Le Grande has been appointed general agent of the Norfolk Southern, with office at Richmond, Va.

G. W. Schelke has been appointed a traveling passenger agent of the Illinois Central, with office at Evansville, Ind.

A. D. Beals has been appointed a traveling freight agent of the Chicago Great Western, with office at Red Wing, Minn.

B. A. Hamilton has been appointed agent in charge of freight traffic for the new agency of the Northern Pacific at Cleveland, Ohio.

A. A. Reinhardt has been appointed traveling freight agent of the Toledo, St. Louis & Western and the Chicago & Alton, with office at New Orleans, La.

E. B. Erwin has been appointed general agent of the San Pedro, Los Angeles & Salt Lake, with office at Denver, Colo., succeeding C. E. Hooper, resigned.

Clarence L. Williams has been appointed a general agent, passenger department of the Canadian Pacific, with office at Pittsburgh, Pa. effective February 1.

W. F. Murray, chief clerk to the general freight agent of the Missouri, Kansas & Texas at Dallas, Tex., has been appointed general agent of the St. Louis Southwestern, with office at Tyler, Tex.

D. W. Calloway, traveling freight agent of the Trinity & Brazos Valley at Fort Worth, Tex., has resigned to accept a position with the New York-Galveston steamship line of the Southern Pacific Company.

H. C. McFadden, president and general manager of the Fitzgerald, Ocilla & Broxton, has been appointed general freight agent of the Georgia & Florida, succeeding T. B. Akridge, with office at Augusta, Ga., effective February 1.

F. F. Barkow, traveling freight agent of the Ann Arbor Railroad, has been appointed a commercial agent, with office at Milwaukee, Wis., succeeding C. S. May, resigned. R. J. Wilda succeeds Mr. Barkow, with office at Menominee, Mich.

J. H. Hackett has been appointed agent of the Erie Despatch, at Akron, Ohio, succeeding D. B. Aungst, commercial agent, assigned to other duties, and the office of commercial agent has been abolished. J. A. Lloyd has been appointed agent, at Salt Lake City, Utah, succeeding F. T. Vincent, deceased.

J. W. White, commercial agent of the Missouri, Kansas & Texas at Denison, Tex., has been appointed commercial agent, with office at Fort Worth, Tex., succeeding F. G. Abbey, who has been appointed chief clerk to the general freight agent. Henry W. Landman, soliciting freight agent at Kansas City, Mo., succeeds Mr. White.

Edward D. Lappin has been appointed a traveling freight agent of the Seaboard Air Line, with office at Kansas City, Mo., succeeding S. C. Bates, resigned to become manager of the Traffic Bureau of Springfield, Mo. W. H. Drew has been appointed a soliciting freight agent, with office at Tampa, Fla., succeeding L. Barwick, resigned.

Incident to the re-districting of the Rock Island Lines, which was announced in the *Railway Age Gazette* of January 20, page 145, W. J. Leahy, general passenger agent of the Chicago, Rock Island & Pacific at Chicago, will have jurisdiction over the First district, with office at Chicago. J. A. Stewart, assistant general passenger agent at Chicago, has been appointed general passenger agent, with jurisdiction over the Second district (except the city of St. Louis, Mo.) at Topeka, Kan. George H. Lee, general passenger agent at St. Louis, will have jurisdiction over the Third district and the city of St. Louis, with office at St. Louis.

Warren K. Cundiff, whose appointment as assistant general passenger agent of the Union Pacific, with office at Omaha, Neb., has been announced in these columns, was born October 19, 1868, at St. Joseph, Mo. He received his education in the public schools, and began railway work in 1886 with the St. Joseph & Grand Island, and remained with that road until June, 1902, during which time it had been merged with and then separated from the Union Pacific. In September, 1906, he went with the Union Pacific at Omaha as a rate clerk, and he was soon promoted to traveling passenger agent, and then to chief rate clerk. His next office was chief clerk, from which position he was recently promoted to assistant general passenger agent, with office at Omaha.

Ralph S. Stubbs, whose appointment as general eastern freight agent of the Southern Pacific and general freight agent of the Atlantic Steamship Lines of that company, with office in New York City, has been announced in these columns, was born February 3, 1882, at Ashland, Ohio. He graduated from the University of Nevada in 1901, and began railway work in 1902 as a clerk with the Armour Car Lines at Chicago. A year later he was appointed general eastern agent of the Continental Fruit Express in Chicago, and in 1905 was made foreign freight agent of the Southern Pacific in New York City. His next position was general freight and passenger agent of the Arizona Eastern and assistant general freight and passenger agent of the Southern Pacific at Tucson, Ariz., to which he was appointed in April, 1909, and from which he was recently promoted as above.

W. F. Paton, whose appointment as general passenger agent of the National Railways of Mexico, with office at Mexico City, has been announced in these columns, was born June 17, 1870.

He received his education in the public schools of New York City, and began railway work in 1887 as a stenographer in the purchasing department of the Mexican National Railroad, now part of the National Railways, in New York City. He was transferred to the traffic department in the following year, and he was contracting freight agent for eight years from 1889. He was then made general eastern agent, and from 1904 to 1908 he was general eastern agent for the National Lines of Mexico at New York. His next office was general agent at Cincinnati, Ohio, for the National Railways of Mexico, and in April, 1909, he was appointed assistant general passenger agent, with office at Mexico City. He was appointed general passenger agent of the National Railways of Mexico, the Interoceanic Railway of Mexico, the Vera Cruz & Isthmus and the Pan-American on January 1, 1911.



W. F. Paton.

#### Engineering and Rolling Stock Officers.

W. J. Hoskin, shop master mechanic of the Chicago & Alton at Bloomington, Ill., has been appointed road master mechanic on the Northern and Southern divisions. A. G. McLellan, formerly with the Grand Trunk at Battle Creek, Mich., succeeds Mr. Hoskin.

F. W. Gilcreast, whose resignation as division engineer of the Lehigh Valley, at Hazleton, Pa., has been announced in these columns, has been appointed chief engineer of the Lehigh & New England, in charge of the Tamaqua extension, with office at Mauch Chunk.

Frank T. Slayton, whose appointment as superintendent of motive power of the Virginian Railway, with office at Princeton, W. Va., has been announced in these columns, was born March 31, 1862, at Iowa Falls, Iowa. He was educated in the common schools and began railway work in December, 1881 in the shops of the Canadian Pacific, at Winnipeg, Man. The following year he became a fireman on the Burlington, Cedar Rapids & Northern, now a part of the Chicago, Rock Island & Pacific. He remained in this position until September, 1886, since which time he has been consecutively to July, 1900, engineer, trainmaster and division master mechanic on the Minnesota & Northwestern, now a part of the Chicago Great Western. In July, 1900 he was appointed master mechanic of the St. Joseph & Grand Island, and was later promoted to superintendent, which position he held at the time of his recent appointment as superintendent of motive power of the Virginian Railway.



F. T. Slayton.

#### Purchasing Officers.

George H. Robinson has been appointed general storekeeper of the Oregon Short Line and the Southern Pacific Company lines east of Sparks, with office at Pocatello, Idaho, succeeding F. W. Taylor, resigned to accept service with another company.

#### OBITUARY.

Robert Dudgeon, commissioner of the Pacific Northwest Demurrage Bureau, with office at Seattle, Wash., died in Seattle on January 14.

William D. Knott, purchasing agent of the Atlanta, Birmingham & Atlantic, at Atlanta, Ga., who was recently granted leave of absence on account of ill health, died January 18, at Atlanta.

Henry Wentworth Brown, auditor for the receivers of the Metropolitan Street Railway Company, and president of the Transportation Equipment Company, died January 19 in New York, at the age of 34 years.

George Parsons Sweeley, master mechanic at the Allegheny shops of the Pennsylvania Lines West of Pittsburgh, died at his home in Allegheny, Pa., January 10. Mr. Sweeley was born in Montoursville, July 13, 1856, and was educated in the common schools. He began railway work in the Renovo shops of the Pennsylvania in April, 1875, and was later made shop foreman. In 1888 he was appointed general foreman of the shops of the Pittsburgh, Cincinnati, Chicago & St. Louis. In March, 1893, he was appointed master mechanic of the Pittsburgh, Fort Wayne & Chicago, and in 1896 he went as master mechanic to the Cleveland & Pittsburgh division, at Wellsville. He was appointed master mechanic of the Allegheny shops in 1900, which position he held at the time of his death. Mr. Sweeley was a member of the American Railway Master Mechanics' Association, the Master Car Builders' Association and the Pittsburgh Railway Club.

John Edward Schwitzer, chief engineer of the Canadian Pacific, died at the Royal Victoria hospital, Montreal, on January 23. Mr. Schwitzer was born April 19, 1870, at Ottawa, Ont., and graduated with the degree of B.A.Sc. in civil engineering from McGill University, Montreal, in 1891. He began railway work in 1888 as a rodman on the Lake Temiscamingue Colonization Railway, now a part of the Canadian Pacific. From January, 1892, to December, 1896, he was engaged in engineering work on various railways, and from December, 1896, to July, 1899, he was in private practice as a civil engineer and land surveyor, at Rat Portage, Ont., and was later town engineer at that place. In July, 1899, he was appointed assistant engineer of the Canadian Pacific, in charge of terminal improvements at Rat Portage, and the following year was appointed assistant engineer of maintenance of way at Winnipeg, Man. He was promoted to resident engineer of District No. 2, in 1901, and in April, 1903, was appointed a division engineer of the Central division, at Winnipeg. In August, 1905, he was appointed principal assistant engineer of the Western lines, and was later assistant chief engineer, which position he held at the time of his appointment on the first of the present month as chief engineer. He was taken sick with pneumonia almost immediately on his arrival in Montreal, and never assumed the duties of his new office.

#### FOREIGN RAILWAY NOTES.

The Chilean government has authorized David Battle, in behalf of the Aguas Blancas Railroad Company, to construct two branch lines: One from kilometre 62 on the main line to the nitrate beds of Remiendo No. 2; and the other from Oficina Valparaiso to Pampa Loreto.

A proposal has been made by the Madeira-Mamore Railway Company, Brazil, to the Bolivian government for the construction of a branch railway 17 miles long from the Madeira-Mamore line across the river Mamore, near the Cachuela Esperanza. The proposal has been accepted, with some modifications. This proposed branch, together with the main line of the Madeira-Mamore Railway, will overcome the last barrier in the way of transportation for the immense territory drained by the Beni and Mamore, with their larger navigable tributaries in Bolivia, to the west and south.



## Railway Construction.

### New Incorporations, Surveys, Etc.

**AMERICAN CENTRAL RAILWAY.**—According to press reports, actual construction work will be started on a section from Vernon, Tex., south, by April 1. The projected route from Vernon, northwest, is via Olustee, Okla., and Mangum, to Miami, Tex. Considerable construction work was carried out near Mangum, Okla., several months ago. The Central Construction Co., Mobeetie, Tex., has the contract. W. E. McClintock, chief engineer, Mobeetie.

**ARANSAS TERMINAL.**—An officer writes that work is being carried out by the company's men on the line from Aransas Pass, Texas, southeasterly along the channel of the Aransas Pass Channel & Dock Company to deep water, on the east side of Harbor island. Grading is about 60 per cent. finished. Track has been laid on 3,000 ft., and drawbridges are on the ground, ready for erection. The work includes a trestle about three-quarters of a mile long. E. O. Burton, president, Gibbs building, San Antonio; C. S. Corrigan, chief engineer, Box 183, Aransas Pass. (August 5, p. 262.)

**ATHENS & SOUTHEASTERN.**—An officer writes that this company has laid track on eight miles between Athens, La., and Fords. The line was built to haul lumber and general merchandise, and may eventually be extended east to Arcadia, seven miles. R. H. Swartz, president, St. Louis, Mo.; J. E. Kennedy, general manager, Athens, La.

**ATLANTIC, OKEECHOBEE & GULF.**—Organized in Florida with \$1,000,000 capital, and offices at 818 Audubon building, New Orleans, La., which will be transferred in March to Tampa, Fla. The company plans to build from a point near Tampa, southeast through the counties of Hillsboro, Polk, De Soto, Lee, Palm Beach and Dade to a point near Miami, with a branch from near Fort Meyers, northeast to Melbourne, in Brevard county; also a branch from Fort Myers, north through the counties of Lee, De Soto, Manatee and Hillsboro to Tampa, and another branch from Bassenger, north to St. Cloud. H. C. Farriot, president; R. H. Riley, W. Graham and A. H. West, vice-presidents; D. A. Simmons, secretary; W. H. Milton, treasurer, and F. B. McGarry, general counsel, H. M. McElroy, chief engineer. F. P. Bell may be addressed at New Orleans, La.

**BALTIMORE & OHIO.**—An officer writes that track laying has been finished on the following improvements: Second track from Benton Ferry, W. Va., to Gaston Junction, three miles; Valley Falls to Powell, three miles, and on the bridge over the Monongahela river.

**CANADIAN PACIFIC.**—An officer is quoted as saying that this company will lay about 500 miles of track in the western part of Canada during the summer of 1911. This includes the completion of the double track between Winnipeg, Man., and Brandon, and considerable double tracking work near Moose Jaw, Sask. Through the mountain section the road is to be ballasted with rock, and, in addition, the bridges are to be strengthened to carry heavier rolling stock. A number of new steel bridges will be built, and a number of branch lines, each from 20 to 40 miles long, are to be constructed.

**CAROLINA TRACTION.**—According to press reports, this company will let contracts at once to build from Winston-Salem, N. C., north to Ruralhall, thence northeast to Lawsonville, and then northwest to Floyd, Va., with a branch west to Danbury, N. C., in all 130 miles. H. P. McKnight, Southern Pines, is the principal promoter.

**CHICAGO, ROCK ISLAND & PACIFIC.**—An officer writes regarding the report that an extension is to be built from Des Moines, Iowa, to a connection with the Kansas City line at Allerton, Wayne county, that the company has made surveys, but no authority has yet been given for carrying out the construction work.

**COLORADO & SOUTHERN.**—Grading work is now under way on the Colorado Railroad, from Dixon, Colo., to Cheyenne, Wyo.,

32 miles. It is said that this work is being carried out by the following contractors: Eggleston Matthews, Gilbert Brothers, Lafferty & Allen, E. C. Caldwell, Dooling Brothers, Owens Brothers, P. Fitzgerald and Crook & Hoffman. The work has been divided into short sections, as much of the construction work is heavy and the contracts call for completion of the work within five months. Kilpatrick Brothers, Denver, Colo., are the general contractors. (January 6, p. 62.)

**COLORADO RAILROAD.**—See Colorado & Southern.

**GRANT RAILROAD.**—This company has been granted a certificate of public convenience and necessity in Wisconsin, to build from Woodman, Wis., on the Prairie du Chien division of the Chicago, Milwaukee & St. Paul, south about 11 miles to Mount Hope, thence southwest six miles to Patch Grove, and then continuing southeast about five miles to Bloomington, all in Grant county. The company has located the line and financial arrangements are being made to carry out the work. The line will carry live stock, dairy products, farm produce, timber and coal. William Leighton, president, Mount Hope; S. C. Scott, chief engineer, Galena, Ill. W. E. Howe, Bascobel, Wis., is interested.

**HOUSTON & TEXAS CENTRAL.**—According to press reports, heavier rail is being laid on the section between Austin, Texas, and Hempstead.

**HUDSON BAY, PEACE RIVER & PACIFIC.**—Application will be made by this company for incorporation, in Canada, to build from Nelson, on Hudson Bay, north to Fort Churchill, thence west via Fort Vermillion, Alb., on Peace river, Fort St. John, B. C., Laurier Pass, and along Nass river to the Pacific ocean, thence to Port Simpson. A branch is also to be built south to Edmonton, Alb. It is understood that the project will receive government subsidies in cash and lands.

**JOLIET & LAKE MANKAN COLONIZATION RAILWAY.**—This company has made application in Canada to build from a point near Joliet, Que., south to Montreal, about 45 miles. The names of the promoters are not given.

**MAINE ROADS.**—A bill is to be introduced in the Maine legislature, asking for a charter to build from Brewster, Me., on the Penobscot river opposite Bangor, connecting with the Maine Central, thence easterly about 20 miles, and then northeasterly via Bancroft, on the Maine Central, to Houlton, on the Bangor & Aroostook. A. L. Lumbert, Houlton, is interested.

**MIDLAND CONTINENTAL.**—According to press reports, plans are being made to complete the construction of this line from Pembina, N. D., southwest to Edgeley, about 212 miles. Grading work was finished last year on the first 50 miles between Edgeley, on the Chicago, Milwaukee & St. Paul, and Jamestown, on the Northern Pacific, and some bridge work was carried out on this section. F. K. Bull, president, Racine, Wis. (December 30, p. 1281.)

**MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.**—An officer writes regarding the reports that an extension is to be built from Ambrose, N. D., to Plentywood, Mont., that the company does not contemplate building such an extension at the present time.

**NATIONAL RAILWAYS OF MEXICO.**—Grading work is nearing completion on a branch of the Vera Cruz & Isthmus, from Rives, Vera Cruz, Mex., north to San Andres, Tuxtla, 47 miles. McGavock & Barrow are the contractors. A temporary bridge is being constructed over the San Juan river. Another branch is being constructed from Brisbin, Vera Cruz, north to Cosamaloapan, about 40 miles. Track laying is already under way on the first section of 20 miles.

**NEVADA-CALIFORNIA-OREGON.**—An officer writes that contracts will be let within 30 days to build an extension of 40 miles north of Alturas, Cal. This will include six miles of rock work. (December 9, p. 1130.)

**NORTH CAROLINA ROADS (ELECTRIC).**—Plans are being made to build an electric line from Charlotte, N. C., southwest to Piedmont, S. C., with a number of branch lines. J. B. Duke, B. N. Duke and W. S. Lee, Durham, N. C., are back of the project.

**NUECES RIVER VALLEY.**—An officer is quoted as saying that construction work is to be started within 90 days, from Eagle

Pass, Tex., east. The plans call for a line from Eagle Pass, east to Beeville, about 180 miles. The line is eventually to be extended to the gulf of Mexico. W. A. Frisby, president; G. A. Hull, consulting engineer, Beeville. (November 11, p. 941).

**OAKLAND & BAY SHORE (Electric).**—Incorporated in California with \$500,000 capital, to build an extension of the Oakland & Antioch, near Oakland, Cal.; also to build a branch to Martinez. R. H. Miller, A. J. Krutmeyer and J. R. Selby are incorporators.

**OKLAHOMA ROADS.**—A bill is now under consideration to authorize the state of Oklahoma to build a line from the north-west corner of the state to the southeast section, about 425 miles. The bill will provide for a \$10,000,000 bond issue, to be decided by a special election.

**PACIFIC GREAT WESTERN.**—Organized in Oregon to build from Eugene, Ore., west to Mapleton, on the Suislaw river, about 60 miles. The work will include piercing a 1,100-ft. tunnel. Surveys have already been made. R. B. Hunt, J. Ayers, Eugene, and F. M. De Neffe, Portland, are incorporators.

**PECOS VALLEY SOUTHERN.**—This company has about finished grading work, and track laying is to be started at once on the extension from Balmorhea, Texas, south to Phantom lake, six miles. Negotiations are under way for continuing the extension to Alpine. (December 30, p. 1281.)

**PENNSYLVANIA RAILROAD.**—This company has opened for traffic a new inbound, also an outbound track over the Schuylkill river to West Philadelphia station, Pa., increasing the running tracks over the Schuylkill river from four to six tracks. The improvements to the Broad street station approach include the widening of the bridge over the Schuylkill river to provide for an additional inbound and outbound track to the upper level of West Philadelphia station, also a new 70-ft. turntable, and a new passenger storage yard between Twentieth and Twenty-third streets, large enough to accommodate about 50 steel cars, or about nine suburban trains. To relieve the congestion in the Philadelphia yards the blind stub tracks at the southern end of the passenger yard in West Philadelphia have been connected up with the inbound Philadelphia, Baltimore & Washington track, giving outlets from this yard at the north and south ends. To widen the main line bridge to carry two additional tracks the present bridge abutments were extended on each side. The new tracks are carried on trusses wholly separate from the old structure. The opening of the two tracks and the completion in the near future of the storage yard east of the Schuylkill river will do much to relieve congestion on the approach to Broad street station. This improvement, which is preliminary to such other improvements as may be suggested by the committee recently appointed, will cost about \$750,000.

**QUEBEC & GREAT NORTHERN.**—Application will be made for a charter in Canada, to build from Port Arthur, Ont., east to New Liskead, thence northeasterly to Maniwaki. A line is to be built northerly from Maniwaki to the Grand Trunk Pacific, and another line from the Grand Trunk Pacific via the Coulange river to Ottawa.

**R. & T. CEMENT RAILWAY (Electric).**—An officer writes that this company was incorporated in Maine in 1908. The plans call for building a line near Rockland, Me., to be used by the New England Portland Cement Company, connecting the quarries and works of the company with the water front. The line will be between three and five miles long. Surveys have been made, but contracts are not yet let. Alfred S. Black and Edward B. McAllister, Rockland, are interested.

**SOUTHERN RAILWAY & NAVIGATION COMPANY.**—An officer writes that this company is building from Natchez, Miss., southwest via Vidalia, La., and Morville to Monterey, on the Black river. Track has been laid on seven or eight miles. The line is being built to carry lumber, cotton, rice and agricultural products. D. K. Jeffris, president, Chicago. (See Louisiana Roads, January 13, p. 104.)

**VELASCO, ROSENBERG & NORTHERN.**—Plans are being made to build a line through Brazoria county, Texas, west of Columbia. C. S. Edwards, West Columbia, associated with residents of Brazoria, is back of the project.

**VERA CRUZ & ISTHMUS.**—See National Railways of Mexico.

## Railway Financial News.

**CENTRAL OF GEORGIA.**—In accordance with the suit recently decided in favor of the second and third preference income bondholders, arrangements have been made for the payment of the balance due to make the full interest of 5 per cent. on the second preference Central of Georgia income bonds, and the total 5 per cent. due on the third preference income bonds for the year 1907. From these payments are deducted the expenses of the protective committee which brought the suits.

**CHICAGO, MILWAUKEE & ST. PAUL.**—The *Commercial & Financial Chronicle* of January 21 contains the following: "The rumor that \$50,000,000 new bonds will shortly be offered for sale is generally discredited, but it appears probable that later in the year the company will raise from \$10,000,000 to \$15,000,000 new capital by the sale of bonds or otherwise, in order to finance the purchase of new rolling stock and pay for the completion of construction work on certain of its branch lines.

**CUMBERLAND RAILWAY & COAL.**—Stockholders are to vote February 15 on the question of making a mortgage to secure an issue of \$3,000,000 bonds.

**FONDA, JOHNSTOWN AND GLOVERSVILLE.**—The New York Public Service Commission, second district, has authorized this company to issue \$380,000 first consolidated mortgage, 4½ per cent. 50-year bonds, at not less than 85, and the proceeds to be used for the payment of indebtedness to the amount of \$185,130, and for other co-operate purposes.

**ILLINOIS CENTRAL BOND SALE.**—This company has sold to Kuhn, Loeb & Co., \$2,740,000 first and refunding 4 per cent. bonds. The bonds are part of an issue of \$120,000,000 authorized in 1908, of which \$20,000,000 are now outstanding. Of the total, \$61,766,000 are reserved for refunding. Up to June 30 last, the Illinois Central has advanced about \$3,000,000 to subsidiary companies, partly to enable those companies to pay their unearned interest. Presumably the Illinois Central is reimbursing its treasury for such advances.

**KANSAS CITY VIADUCT & TERMINAL.**—The period from July 1, 1909, to January 1, 1911, during which the interest coupons on the first mortgage bonds were paid through the issue of income bonds, having expired, a protective committee has been formed as follows: R. C. Storey, chairman; Benjamin Graham, William C. Lane, R. Walter Levy and Lawrence E. Sands, with William G. Dooley as secretary, 25 Broad street, New York.

**KENTUCKY & INDIANA TERMINAL.**—The £1,031,000 (\$5,155,000) first mortgage 4½ per cent. bonds of 1911-1961 recently offered in London were oversubscribed for. The bonds are guaranteed principle and interest by the B. & O., the C. I. & L. and the Southern Railway. From the proceeds of this sale the \$1,000,000 Kentucky & Indiana Bridge & Railroad first mortgage bonds, due March 11, 1911, are to be refunded. The K. & I. Bridge & Railroad \$1,069,000 first consolidated mortgage 4 per cent. bonds due 1950 have been bought in and cancelled.

**MISSOURI, KANSAS & TEXAS.**—Stuyvesant Fish, formerly president of the Illinois Central, has been elected a director of the Missouri, Kansas & Texas.

**NEW YORK CENTRAL & HUDSON RIVER.**—The *Boston News Bureau* says: "There are good reasons for the belief that the Central's forthcoming financing will take the form of an issue of terminal bonds secured by a mortgage on the New York terminal. It is understood that the amount of bonds to be issued is \$50,000,000, and that they will bear 4½ per cent. interest."

**NEW YORK, NEW HAVEN & HARTFORD.**—An additional block of \$10,000,000 one-year 4½ per cent. notes has been sold by the New Haven. This makes \$22,000,000 one-year notes which the company sold during the last year, the company having sold \$10,000,000 to F. S. Mosley & Co., Boston, as noted in these columns last week, and on Wednesday of last week sold \$2,000,000 to a Boston banking house. It is said that the company received par for the notes.



**NORFOLK SOUTHERN.**—Stockholders are to vote at a special meeting January 30 on the question of authorizing a new mortgage to secure \$35,000,000 new 5 per cent. bonds. This mortgage will replace the present mortgage, securing \$12,000,000 authorized bonds. Last week through a typographical error, this paragraph was placed under the caption of Seaboard Air Line.

**PHILADELPHIA & READING.**—See Reading Company.

**PITTSBURGH & SHAWMUT.**—F. J. Lisman & Co., New York, are offering a block of the first mortgage 5 per cent. sinking fund bonds of the Pittsburgh & Shawmut at 94½. Of the authorized \$12,000,000 bonds, \$4,000,000 are outstanding. The road forms a southern extension of the Pittsburgh, Shawmut & Northern. The Pittsburgh, Shawmut & Northern proper has been operated by a receiver for about five years, and a letter from F. S. Smith, the receiver, says that the bulk of its securities is owned by a few important interests who meantime have furnished the money for the large body of coal lands and part of the capital for the construction of the Pittsburgh extension. They have not proceeded with foreclosing the mortgage, being desirous of upbuilding the property and developing the traffic of the Pittsburgh extension before formulating a reorganization plan.

**PITTSBURGH, SHAWMUT & NORTHERN.**—See Pittsburgh & Shawmut.

**READING COMPANY.**—This company has made arrangements to sell to J. P. Morgan & Co., New York, and Drexel & Co., Philadelphia, \$20,000,000 general mortgage 4 per cent. bonds to pay for the retirement of \$18,811,000 Philadelphia & Reading Railway consolidated mortgage 7 per cent. bonds due in June.

**SEABOARD AIR LINE.**—Through a typographical error, the paragraph referring to a stockholders' meeting of the Norfolk Southern was placed last week under the caption of Seaboard Air Line.

**ST. LOUIS SOUTHWESTERN.**—The company has sold to William Salomon & Co., and Rhoades & Co., New York, \$1,620,000 equipment 5 per cent. notes. The notes were all promptly resold by the bankers.

**SOUTHERN PACIFIC.**—If nothing happens to change the present status of affairs with the Southern Pacific before June 30, the Southern Pacific first refunding 4 per cent. bonds, due 1955, will on that date become legal investments for savings banks in New York. The law requires that bonds to be legal investments for savings banks in New York must be issued by a company that has paid dividends of at least 4 per cent. on all stock for five years previous to the date of the bonds becoming legal investments to have shown gross earnings for those five years of five times or more the fixed charges; and that the bonds be a first or refunding mortgage with certain qualifications on 75 per cent. of railway owned.

**WABASH-PITTSBURGH TERMINAL.**—Under the direction of the Chaplin protective committee, the receivers of this company have brought suit against the Wabash Railroad to establish a stockholders' liability against the Wabash Railroad as owner of \$10,000,000 Terminal company stock. Complainants say that the Wabash Railroad is liable as the original subscriber to \$10,000,000 stock of the Terminal company which the Pittsburgh-Toledo syndicate took from the Terminal company and later turned over to the Wabash, the syndicate receiving in return \$10,000,000 par value of the Wabash Railroad stock. This the syndicate sold, but none of the proceeds of this sale, it is said, has ever been paid to the Wabash-Pittsburgh Terminal. See Wabash Railroad.

**WABASH RAILROAD.**—The *Wall Street Journal* says that the Wabash Railroad will have to make further arrangements for taking care of the Wheeling & Lake Erie \$8,000,000 notes which were purchased by a syndicate for the Wabash under an agreement by which the Wabash was to take up these notes at 6 per cent. interest. This agreement has about expired, and further arrangements will have to be made in the near future. The liability, including interest, now amounts to about \$9,380,000. See Wabash-Pittsburgh Terminal.

**WHEELING & LAKE ERIE.**—See Wabash Railroad.

## Late News.

*The items in this column were received after the classified departments were closed.*

W. I. Converse has been appointed superintendent of the Deering Southwestern, with office at Deering, Mo.

The Missouri Pacific is said to have ordered 1,000 refrigerator cars and 1,000 steel hopper cars from the American Car & Foundry Company.

The Western Maryland has ordered 10,000 tons of rails from the Bethlehem Steel Company and 2,000 tons from the Pennsylvania Steel Company. The Chicago, Milwaukee & St. Paul is in the market for 8,000 tons of rails.

The Missouri Pacific has established a package car service from Boston, Mass., to the Pacific coast via the Boston & Maine, New York Central & Hudson River, Lake Shore & Michigan Southern and the Cleveland, Cincinnati, Chicago & St. Louis to East St. Louis, thence via Missouri Pacific affiliated lines.

P. A. Auer, general passenger and ticket agent of the Chicago, Rock Island & Gulf, at Fort Worth, Texas, has been appointed assistant general passenger agent of the Rock Island Lines, with office at Chicago. George S. Pentecost, assistant general passenger agent of the Chicago, Rock Island & Pacific, at Kansas City, Mo., succeeds Mr. Auer, with office at Fort Worth, Texas, and his former position has been abolished.

The reductions in sleeping car rates, which have been under consideration for several months, have been announced by the Pullman Company to go into effect February 1. The tariffs filed provide that where the lower berth rate is \$1.50 the upper berths will be \$1.25, and where the lower berth rate is more than \$1.50 the upper berths will be 20 per cent. less. The minimum rate for lower berths will be \$1.50, and that of upper berths \$1.25.

The \$22,000,000 one-year 4½ per cent. notes issued by the New York, New Haven & Hartford, as noted on page 184, will be held to the amount of about \$11,000,000 to meet obligations maturing before February 1, 1912. The remaining \$11,000,000 is to be put out at interest and used at the discretion of the board of directors as occasion may call. The main payment before February 1, 1912, will be \$6,700,000 five-year notes, which mature during January, 1912.

Representatives of the railways and brotherhoods and inspectors of the Interstate Commerce Commission have agreed on the following recommendations to the commission for extension of time to enable carriers to comply with provisions of the safety appliances law for equipment in service April 14, 1910. Carriers will not be required to change the brake staffs from the left to the right side of steel or steel underframe cars with platform end sills or change the end ladders on such cars except when these appliances are renewed. Carriers to be given five years from July 1, 1911, to change the location of the brake staffs on all other cars, and also to comply with the other brake specifications on all cars. That carriers be not required to make changes or get additional end ladder clearance on cars that have ten or more inches end ladder clearance within 30 inches of the side of the car until the car is shopped for work amounting practically to rebuilding the body of the car. That carriers be granted five years after July 1, 1911, to change cars having less than 10 in. end ladder clearance within 30 in. of the side of the car to comply with the standard. That an extension of five years after July 1, 1911, be given for changing all other appliances on freight cars provided that where the following appliances are within three inches of the required location no change will be required: All hand holds except end holds under the sills, ladders, sill steps and brake staffs. That an extension of three years from July 1, 1911, be granted to change passenger cars; one year from July 1, 1911, to change switching locomotives, and two years from that date to change all other locomotives. The committee also agreed on numerous changes in the standards.

## Supply Trade Section.

The Hicks Locomotive & Car Works plant, Chicago Heights, Ill., valued at \$750,000, will be sold at Chicago on February 21 by William McInnes, receiver.

The McKeen Motor Car Company, Omaha, Neb., has delivered two 70-ft. all-steel gasoline motor cars to the Southern Pacific. This makes a total of ninety-nine 200-h.p. motor cars built by this company.

W. G. Tawse, road foreman of engines of the Chicago & Eastern Illinois, has resigned that position and is now with the Locomotive Superheater Company, New York, with office at Chicago.

The Crawford Locomotive & Car Company, Streator, Ill., has received an order from the Atchison, Topeka & Santa Fe for two dynamometer cars. The cars will be of steel construction, 51 ft. 3 in. long and 9 ft. 10 $\frac{3}{4}$  in. wide.

The Western Electric Company, Chicago, recently opened three new branch houses: one in Buffalo, N. Y., another in Portland, Ore., and a third in Milwaukee, Wis., giving it 23 branch houses in different parts of the United States.

Thomas L. Mount has been appointed eastern sales agent of the Consolidated Railway Electric Lighting & Equipment Company, New York, with office in New York. L. J. Kennedy has been made western sales agent, with office at Chicago.

Joseph T. Ryerson & Sons, Chicago, at the annual meeting of directors, held January 23, elected the following officers: President, Clyde M. Carr; vice-president and treasurer, Joseph T. Ryerson; secretary, Gilbert H. Pearsall; chairman of the board, Edward L. Ryerson.

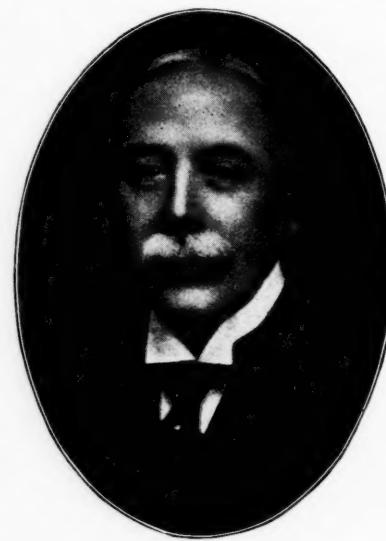
F. J. Bingham, who has been a general sales agent of the Union Fibre Company, Chicago, resigned January 15, to become general sales agent of the Northern Insulating Company, St. Paul, Minn., with headquarters in the Steger building, Chicago. The company will make a full line of refrigerator car lining and cold storage insulations.

Thomas H. Garland, general agent of the refrigerator service of the Chicago, Burlington & Quincy, resigned December 31, 1910, to become a vice-president of Burton W. Mudge & Co., Chicago. In his new position Mr. Garland will devote his time to the development and manufacture of the various devices designed and patented by him, which are now in general use. Mr. Garland has been in charge of the perishable freight traffic on the Burlington since February, 1900, when that road established a special department to devise ways and means for the proper care of perishable freight. He arranged a systematic refrigerator car service to and from all stations on the line for the transportation of dairy freight, fruits and vegetables in less than carload lots. In developing this service his attention was called to the necessity of better ventilation of refrigerator cars to carry off the heat and gases generated by the fruits and vegetables. For this purpose he designed a special ventilator which is now in use, not only on refrigerator cars, but also on passenger equipment on many large railways.

S. R. Fuller, Jr., who has been sales agent in the New York office of the Scullin-Gallagher Iron & Steel Company, St. Louis,

Mo., since April, 1910, has been made district manager in charge of the Chicago office of that company. George L. L. Davis, assistant to the vice-president, has been made third vice-president. Mr. Davis will remain in charge of the St. Louis sales office.

James A. Farrell, who is to be the new president of the United States Steel Corporation, was born in New Haven, Conn., in 1863. He started work with the New Haven Wire Com-



James A. Farrell.

pany, New Haven, at the age of 16, and was promoted from time to time through various departments of that company, until at the age of 25 he went to Pittsburgh, Pa., as assistant superintendent of the Oliver Wire Company, later becoming superintendent. Four years afterward he took part in the organization of the Pittsburgh Wire Company, was made general manager, and built the plant of this company at Braddock, Pa. The unusual success of the Pittsburgh Wire Company against the competition of that period was no doubt a factor in Mr. Farrell's becoming manager of export sales of the American Steel & Wire Company, Cleveland, Ohio, when that company absorbed the Pittsburgh Wire Company. The large increase in the exports of the American Steel & Wire Company led to Mr. Farrell's being given supervision over the export sales of all of the other manufacturing companies of the United States Steel Corporation, and to the formation in the latter part of 1903 of the United States Steel Products Export Company, New York, of which he became president. The name of this company was changed in 1910 to United States Steel Products Company. Mr. Farrell is widely known in foreign countries, and was the chairman of the committee on foreign relations of the American Iron & Steel Institute during the meetings in October, 1910, which were attended by a large number of foreign steel men. Mr. Farrell's paper on Foreign Relations, read at the meeting, has already been published and translated into several languages. The United States Steel Products Company has been successful in selling the products of the manufacturing companies of the United States Steel Corporation abroad. The exports, which prior to the formation of the company were spasmodic and unsystematic, ranging from several thousand tons to several hundred thousand tons per year, have increased until in 1910 they amounted to more than 1,400,000 tons. Mr. Farrell will be formally elected at the meeting of the board of directors on January 31.

Alson Ellis Clark, president of the Wadsworth-Howland Company, Chicago, died Sunday, January 15, at his home in Chicago. He was born at Barre, Vt., in 1838, and served during the Civil war in the 45th Massachusetts regiment. He came to Chicago in 1865 and became a member of the firm of Hoagland & Clark, commission merchants. He gave up the commission business in 1889 and went abroad for two years. On his return to Chicago he became president of the Wadsworth-Howland Company, the position he held up to his death.

The Vulcan Iron Works, Wilkesbarre, Pa., has received the following orders for locomotives: four switching locomotives for the Keokuk & Hamilton Water Power Company, Keokuk, Iowa; one locomotive for Wade, Clower & Wade, Haines City, Fla.; one mine locomotive for the Booth-Bowen Coal & Coke Company, Freeman, W. Va.; one ten-wheel logging locomotive



Thomas H. Garland.



for the Roanoke Railway & Lumber Company, Norfolk, Va.; one mogul locomotive for the Kentwood & Eastern Railway, Kentwood, La.; one six-wheel switching locomotive for the Erie City Iron Works, Erie City, Pa.; one locomotive for the Northwestern States Portland Cement Company, Mason City, Iowa; one locomotive for the Alpha Portland Cement Company, Easton, Pa., and one locomotive for the S. B. Martin Company, Fiborn Quarry, Mich. .

#### TRADE PUBLICATIONS.

*Cranes.*—The Whiting Foundry Equipment Company, Harvey, Ill., is distributing its crane catalog No. 82, which in addition to the usual catalog descriptions includes good photographs of up-to-date crane installations.

*Valve Gear.*—The Pilliod Company, New York, has published a 20-page illustrated catalog on the Baker locomotive valve gear, pointing out clearly and concisely the most important facts about its construction and operation.

*Electric Drive.*—The General Electric Company, Schenectady, N. Y., has published bulletin No. 4785, on electric drive in wood working plants, illustrating and describing electric motors driving wood boring machines, drills, planes, etc.

*Southern Pacific.*—The Southern Pacific traffic department has issued a booklet describing the agricultural possibilities and climatic advantages of the territory surrounding Hermosillo, Mexico. The booklet is well illustrated with photographs and contains excellent maps.

*Shovels.*—The Hussey-Binns Shovel Company, Pittsburgh, Pa., has issued a set of specifications for shovels, spades and scoops, with illustrations to show the method of casting ingots for shovels and the successive steps in rolling them into the finished blade. A blueprint giving all dimensions of the standard track shovel is included with the specifications.

*Signals.*—The General Railway Signal Company, Rochester, N. Y., has published bulletin No. 115-A on the model 2-A signal to supplement sections 1, 2 and 5 of its catalog. The bulletin contains 20 pages, is illustrated with excellent photographs and gives detailed information on the construction and operation of these signals. During the first year of their manufacture 2,869 of these signals were sold.

*Railway Equipment Primer.*—Bruce Crandall, who wrote the Bettendorf Bears, is the author of a new book, the Railway Equipment Primer. In it he not only gives the merits of the Creco brake beam, made by the Chicago Railway Equipment Company, Chicago, but also summarizes the railway situation facetiously, but effectively. The politician, who "runs" the railways, spelling the word "R-U-I-N" is a character who will especially make a hit with railway officers.

*Rail Inspection.*—Robert W. Hunt & Co., Chicago, have published a booklet describing their system of rail inspection. This booklet contains 25 pages and includes specifications for high T-rails and girder rails recommended by the committee on way matters of the American Street and Interurban Railway Engineering Association at Atlantic City last June, and also the Lorain Steel Company specifications which are used with slight modifications by the Pennsylvania Steel Company. The firm wants to call attention to a typographical error on page 6, section 4, which was discovered after the publication of the pamphlet. This paragraph relates to chemical composition, and the proper limits for the carbon content should be .60 to .75 instead of the limits shown in the pamphlet.

#### RAILWAY STRUCTURES.

ABERDEEN, S. D.—The division headquarters, local freight houses and passenger station of the Chicago, Milwaukee & St. Paul were burned January 23. Press despatches give the loss as \$100,000.

BOSTON, MASS.—An officer of the Boston & Maine writes that the company is looking for a site for the proposed new mechanical department shops, plans for which are being prepared by

the engineering force. Land, however, has not yet been bought. It is understood that the shops will be located at a point within 25 miles of Boston.

BROOKLYN JUNCTION, W. VA.—An officer of the Baltimore & Ohio writes that the company has under consideration the question of building a new bridge over Fish creek, at Brooklyn Junction.

CARROLL, TEXAS.—The Texas & Pacific has prepared plans for a brick freight depot to replace the wooden structure recently burned.

FULLERTON, CAL.—The Atchison, Topeka & Santa Fe Coast Lines will enlarge its station at Fullerton.

GALVESTON, TEXAS.—The Atchison, Topeka & Santa Fe budget for the Gulf lines includes the following improvements for the Galveston division: Track changes in Galveston yards, \$15,000; 16-stall brick and concrete engine house, \$40,000; standard sand house, \$1,750; machine and blacksmith shop, \$8,000; standard 85-ft. turntable, \$7,500; oil and storehouse, \$17,000.

GREENBURG, IND.—The coal dock of the Cleveland, Cincinnati, Chicago & St. Louis, was burned January 20, together with the new interlocking tower near it. The loss is estimated at \$40,000, most of which is covered by insurance.

GRIDLEY, CAL.—The Northern Electric will build a station at Gridley, to cost \$10,000.

GUELPH, ONT.—An officer of the Grand Trunk writes that arrangements have been made for the construction of the new passenger station at Guelph. The improvements include a subway at Neeve street. (January 20, p. 147.)

HOQUIAM, WASH.—The Northern Pacific will build a large wharf and warehouses on the tide flats at Hoquiam, to cost \$10,000.

HOUSTON, TEXAS.—The International & Great Northern has let a contract to C. G. Patton, Houston, Texas, for building wharves and warehouses on the company's property below the turning basis. The wharves will be 400 ft. long, and the warehouses 50 ft. x 500 ft.

JOPLIN, MO.—The St. Louis & San Francisco, according to local press report, will build a nine-story office building and passenger station at Sixth and Main streets. The land necessary for the new building has been secured, and the plans prepared.

LAREDO, TEXAS.—The International & Great Northern and the Texas-Mexican will build a joint passenger station. The cost is estimated at \$25,000.

LOS ANGELES, CAL.—The Los Angeles Railway Company is said to have under consideration the question of building a passenger station at Twelfth and Main streets, Los Angeles.

MARSHALLTOWN, IOWA.—The Iowa Central roundhouse was burned January 15, 12 engines being damaged.

REGINA, SASK.—The Railway Commission of Canada has approved the plans of the city officials of Regina, for a subway to be constructed under the railway tracks, at Broad street.

SAN ANSELMO, CAL.—The Northwestern Pacific will build a passenger station at San Anselmo, to cost \$7,500.

SAN FRANCISCO, CAL.—A permit has been given to the Western Pacific to build a bridge over its tracks on Mississippi street, San Francisco.

SOMERVILLE, TEXAS.—The Gulf, Colorado & Santa Fe has let the contract for building a brick machine shop and boiler room, 92 ft. x 56 ft., work to begin within ten days.

ST. CLAIR, PA.—An officer of the Philadelphia & Reading writes that work is now under way by Edward L. Seeds, Philadelphia, Pa., putting up a concrete, steel and wooden coaling station to be 33 ft. x 910 ft. and 60 ft. high; also for constructing ash pits at the St. Clair yard.

TACOMA, WASH.—The Chicago, Milwaukee & Puget Sound will build the passenger station on Pacific avenue, Tacoma, to cost \$250,000. (September 23, p. 562.)

## Equipment and Supplies.

### LOCOMOTIVE BUILDING.

*The Chinese Government* is in the market for from 20 to 30 locomotives.

*The Grand Trunk* has ordered 12 consolidation locomotives from the American Locomotive Company.

*The Long Island* has ordered four ten-wheel locomotives from the American Locomotive Company. The cylinders will be 21 in. x 26 in., the diameter of the driving wheels will be 60½ in., and the total weight will be 174,000 lbs.

*The Algoma Central & Hudson Bay* has ordered 10 superheater consolidation locomotives from the Montreal Locomotive Works. The cylinders will be 22½ in. x 28 in., the diameter of the driving wheels will be 56 in. and the total weight will be 194,000 lbs.

*The Chesapeake & Ohio* has ordered eight Pacific type locomotives and two eight-wheel coupled superheater passenger locomotives from the American Locomotive Company. The cylinders of the Pacific type will be 22 in. x 28 in., the diameter of the driving wheels will be 72 in., and the total weight will be 215,000 lbs. The cylinders of the eight-wheel coupled locomotives will be 29 in. x 28 in., the diameter of the driving wheels will be 62 in., and the total weight will be 325,000 lbs.

### CAR BUILDING.

*The Kanawha & Michigan* has withdrawn its inquiries for coal cars.

*The Lehigh & New England* is in the market for 500 hopper cars and 300 box cars.

*The Chicago, Indianapolis & Louisville* is in the market for 400 freight cars.

*The American Refrigerator Transit Company*, St. Louis, Mo., is taking prices on 1,000 refrigerator cars.

*The Chicago, Burlington & Quincy* is taking prices on 500 thirty-ton steel underframe refrigerator cars.

*The Barrett Manufacturing Company*, Chicago, is in the market for from 50 to 75 fifty-ton tank cars and three 30-ton tank cars.

*The Tennessee Packing & Stockyards Company*, Nashville, Tenn., is said to have ordered 25 refrigerator cars. This is not confirmed.

*The Chesapeake & Ohio* has ordered 25 coaches from the Pullman Company. This company is also in the market for five 60-ft. steel postal cars.

*The Chicago Railway Company*, mentioned in the *Railway Age Gazette* of December 2 as being in the market for 215 passenger cars, will build this equipment at its shops.

*The Pennsylvania* has ordered for its western lines 500 gondolas from the American Car & Foundry Company, and 300 box cars and 30 flat cars from the Pressed Steel Car Company.

*The El Paso & Southwestern*, mentioned in the *Railway Age Gazette* of September 9 as being in the market for three baggage cars, two postal cars, two chair cars and four coaches, has ordered this equipment from the Pullman Company.

### IRON AND STEEL.

*The Boston & Maine* is in the market for 30,000 tons of rails.

*The Baltimore & Ohio* is in the market for 15,000 tons of rails.

*The Nevada-California-Oregon* has ordered 3,000 tons of rails.

*The Western Maryland* has ordered 9,875 tons of rails from the Carnegie Steel Company.

*The Lehigh Valley* has ordered 20,000 tons of rails from the Bethlehem Steel Corporation.

*The Chicago, Milwaukee & Puget Sound* is said to have ordered 9,000 tons of 85-lb. rails.

*The Chesapeake & Ohio* has ordered 3,000 tons of rails from the Pennsylvania Steel Company.

*The Buenos Aires Central* has ordered 1,000 tons of rails from the Tennessee Coal & Iron Company.

*The Nashville, Chattanooga & St. Louis* has ordered 2,000 tons of rails from the Tennessee Coal & Iron Company.

*The Memphis Union Station Company* has ordered 630 tons of rails from the Tennessee Coal, Iron & Railroad Company.

*The Norfolk & Western* has ordered 3,500 tons of steel from the Virginia Bridge & Iron Company and the Phoenix Bridge Company.

*The Southern* has ordered 22,400 tons of rails from the Tennessee Coal & Iron Company, and 3,000 tons of rails from the Maryland Steel Company.

*The New York Central Lines* have ordered 176,750 tons of rails to meet the requirements for maintenance of the properties this year. This order has been assigned among the several steel companies as follows: United States Steel Corporation, 87,500 tons; Lackawanna Steel Co., 81,250 tons, and Bethlehem Steel Co., 8,000 tons. Of the total order, 82,750 tons are for the lines east of Buffalo, N. Y., and 94,000 tons for the lines west. The rails will be divided among the various roads as follows: New York Central & Hudson River, 65,000 tons; Boston & Albany, 15,000; Rutland, 2,750; Michigan Central, 15,000; Lake Shore & Michigan Southern, 22,500; Cleveland, Cincinnati & St. Louis, 12,000; Peoria & Eastern, 3,500; Cincinnati Northern, 3,500; Chicago, Indiana & Southern, 6,000; Indiana Harbor Belt, 2,500; Lake Erie & Western, 5,500; Toledo & Ohio Central, 6,000; Pittsburgh & Lake Erie, 17,500. The specifications call for a large tonnage of open-hearth rails, and a considerable quantity of ferro-titanium rails, with a higher percentage of ferro-titanium in them than heretofore, will also be used.

*General Conditions in Steel.*—The decision of the steel men to maintain the official prices has induced several railways to place the orders which they had been withholding in the hope of getting lower prices. The orders during the past week have been large and everything seems to point toward a general improvement in the industry. The prices of wire have been raised, but that product is entirely separate and there is no danger of an increase in other prices at present. It is now known that a reduction in prices could only come with a corresponding reduction in wages, and that is not likely.

### FOREIGN RAILWAY NOTES.

At a recent meeting of the North-Eastern Ural Railway Company, the question was discussed as to the construction of new lines of railway in Russia. The proposed lines would run from Taboriansk to Ekaterinburg via Turinsk and Irbit, and also from the Alapayevsk iron works to Bogdanovich via the Egorshinsk mines. The total length of line would be 309 miles and the cost of construction is estimated at about \$14,630,000.

A new section of the Madeira-Mamore Railway, Brazil, extending for 40 miles from the Jacu Parana to kilometre 152, has been formally opened to traffic. A trip is now made daily over the operated section of the line from Porto Velho to kilometre 152 in about 12 hours. Rubber loaded on cars at the present terminus at kilometre 152, in the morning can be transhipped from the cars to ocean steamers at Porto Velho on the evening of the same day, and thence carried direct, without further handling, to the United States or Europe.

The press of Montevideo announces that the government of Uruguay has received and is studying a proposal to build a standard gage railway starting from Montevideo, or some other point on the Uruguay river, and traversing the republic as far as the Cuareim river, the northwestern border of Brazil. The concession would also include powers to expropriate for purposes of agricultural colonization, up to 24,711 acres of land in the vicinity of each station, the stations not being more than 9 miles apart, and also to construct ports, wharves, depots, elevators, etc., on the Uruguay river.